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SHOULD YOU
TRUST YOUR SYSTEMS
TO AN ASP?
Do you have a
choice?

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WHY I.S. AND
MARKETING HATE
EACH OTHER'S GUTS
And what to do
about it

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What's



William Hickman
Anheuser-Busch



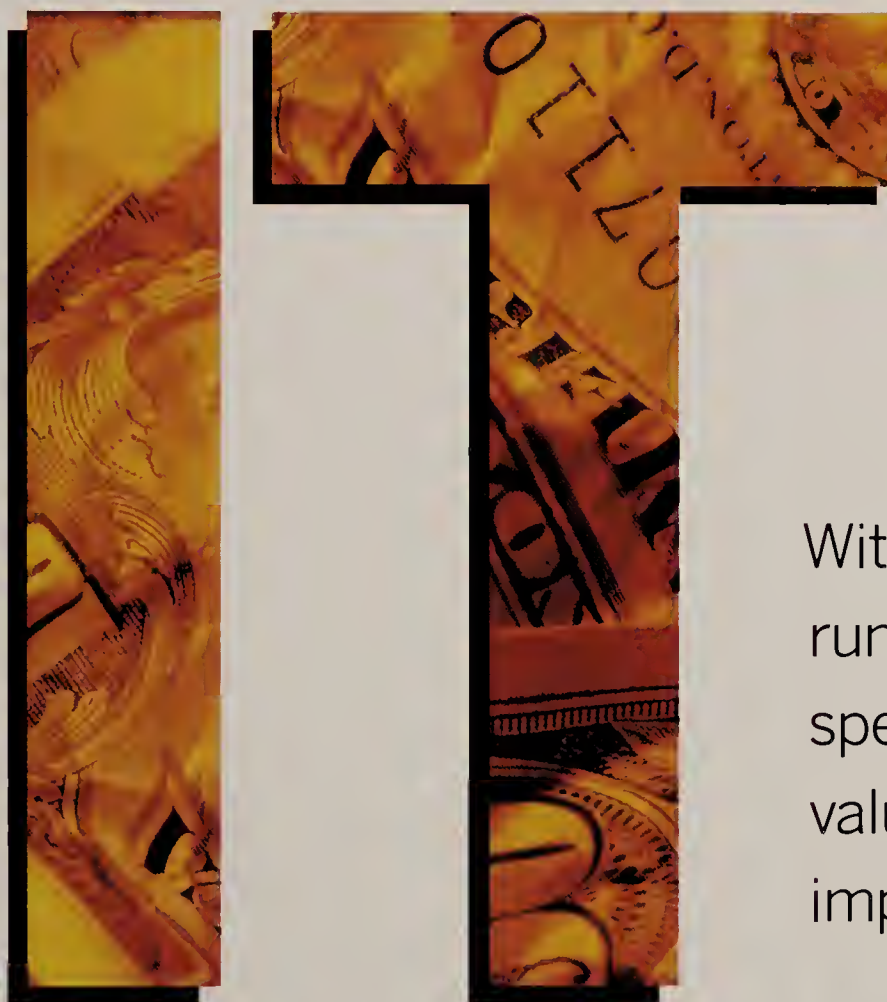
Laraine Rodgers
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Worth?

SPECIAL FIVE-PART REPORT BEGINS ON PAGE 111

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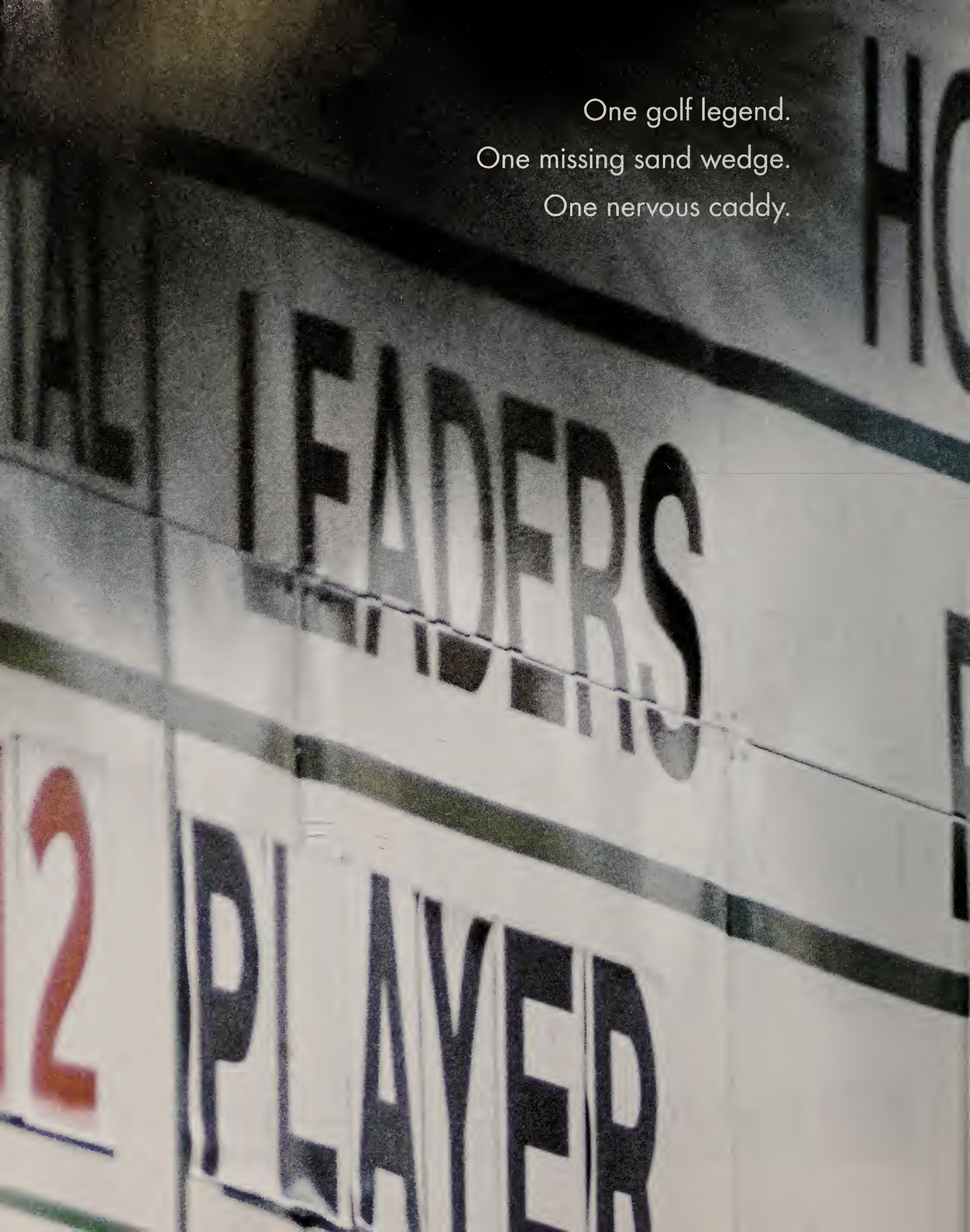
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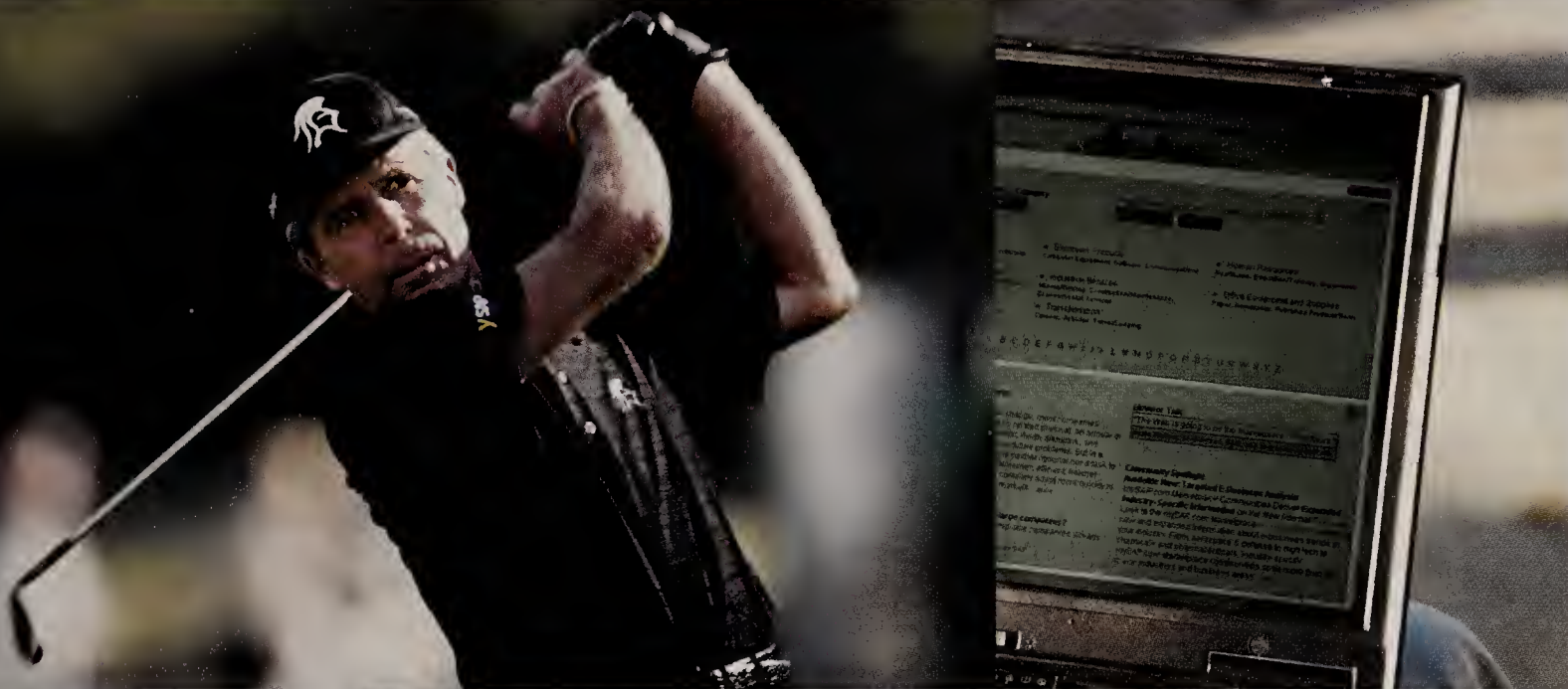
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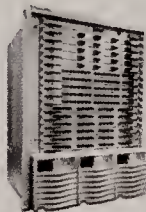
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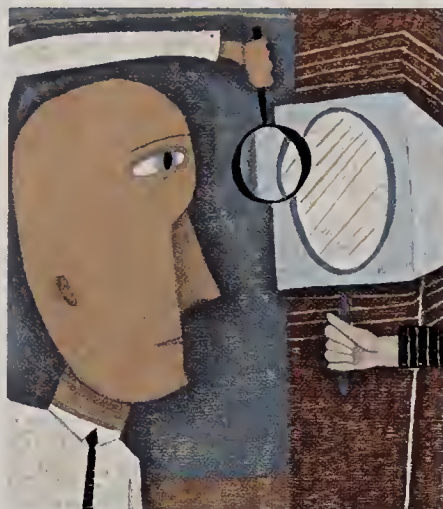
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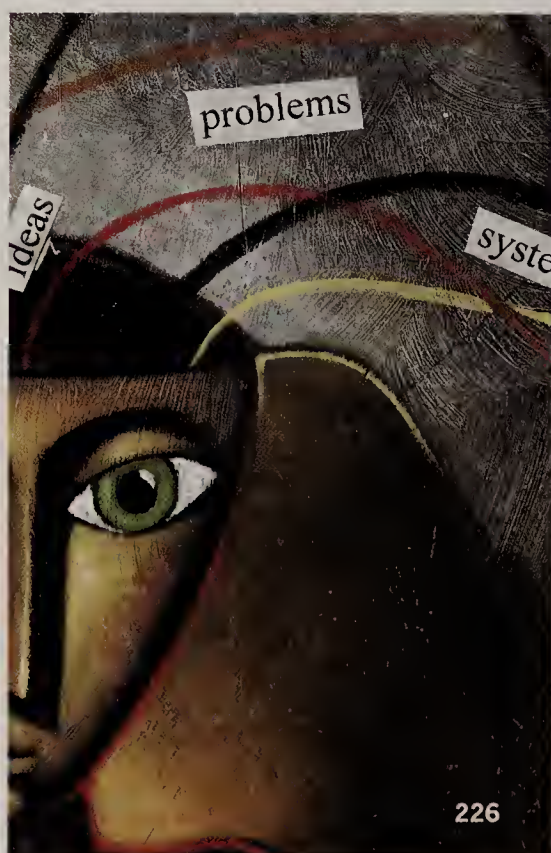
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CORIO

APPLICATIONS ON DEMAND

SECRETS TO SUCCESS: No. 163

Philip Blank, Senior VP & CIO, MadeToOrder.com

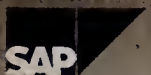
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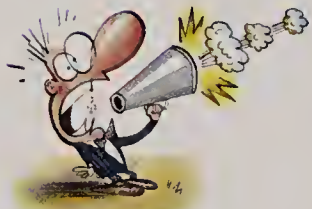
CIO RADIO Charlotte Roberts, coauthor of *The Fifth Discipline Fieldbook*, explains how companies can draw on the values and visions of their employees. (Coming May 5.)

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From the Editor

lundberg@cio.com

The Best and Worst of Times

For a magazine editor, life doesn't get much better than when it's rife with both opportunity and risk. This issue's a great example. On the opportunity side, we've got Lauren Gibbons Paul's "The Board Game," beginning on Page 180, in which we look at the growing phenomenon of CIOs sitting on corporations' boards of directors. The benefits are many and substantial: the opportunity to hone one's business acumen, exposure to new technologies and business trends, and marvelous contacts (in the other members of the board). Board gigs are often well compensated and these days are likely to include stock options.

On the risk side, Executive Editor Christopher Koch's pair of stories on ASPs (beginning on Page 82) is also a must-read. ASPs have tremendous potential to speed and simplify an organization's deployment and use of technology. But all the usual risks of outsourcing apply, including the fact that your company becomes dependent on the success of many subcontractors over which you have no direct influence. And for those who are still defending IT fiefdoms (and you know who you are), it may be the biggest threat yet.

Of course, CIOs know better than most that opportunity and risk are often two sides of the same coin. Our special



report on IT Value, "What's IT Worth?" coordinated by Katherine Noyes and beginning on Page 111, explores how to balance the need for speed against the need to know when your high-ticket efforts are paying off. Given the trends—including outsourcing IT applications to service providers—if you don't know what the costs and benefits of your technology initiatives are, I guarantee you will lose control of your destiny.

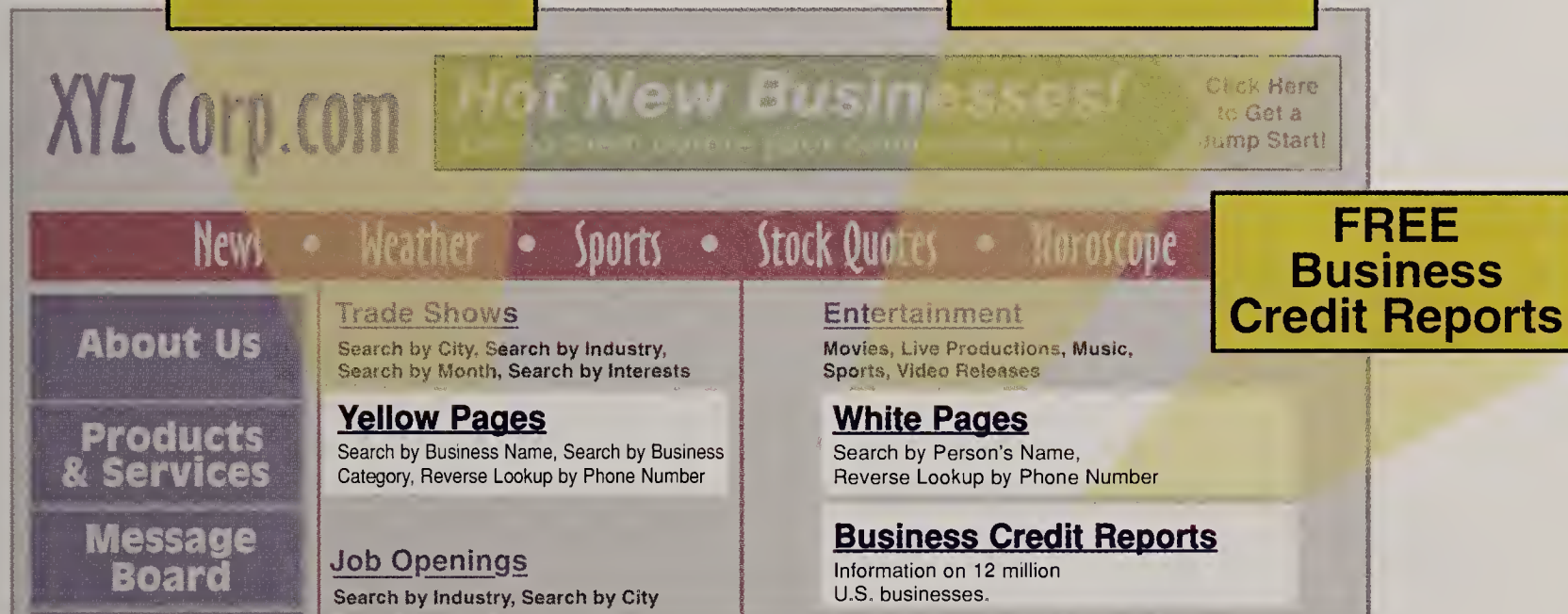
One last word on the best and worst of times. This issue of *CIO* is our biggest ever. The good side of that is we're enjoying the benefits of this incredible economy. The not so good part is we're all working incredibly hard to grow at this rate and keep the magazine's quality up to our traditionally high standards. Most of you are in the same boat—which, as I'm sure you're aware, will founder if you fail to attract and hold on to the talented people you need to pull it off. So while I know you won't have time to read this whole large issue, one more piece I recommend is Senior Copy Editor Tom Wailgum's "Loyalty Complex," beginning on Page 254. It's insight and advice straight from the horse's mouth.

Allie Lundberg

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In My Opinion

jlevy@idg.com

Lagging in the New Economy

If anyone needs proof of the role that big business hasn't played in the e-commerce revolution, a recent survey by PricewaterhouseCoopers and The Conference Board might be enlightening. The research set out to determine how global businesses are measuring up as successful e-businesses.

These were heavy hitters, mind you—90 percent of the 80 companies surveyed have annual revenues of \$1 billion or more, half with sales above \$5 billion. They comprise manufacturing, financial services, transportation, retail, energy and communications, and virtually all conduct business in international markets. So you might expect these beacons of global commerce to be leading the way in the new economy, right?

Not exactly. Consider the following:

- 79 percent of the companies surveyed said that e-business accounts for less than 5 percent of revenues.
- Only 28 percent are able to process transactions online; only 40 percent actually handle orders electronically.
- 60 percent do not yet have extranets linking operations with key suppliers and financial partners.
- Less than half have any quantitative or qualitative methods in place to assess e-business performance.
- A quarter of the group has yet to move beyond basic web "brochureware" in implementing online business.



One of the biggest disconnects was between stated e-business needs and corresponding investment: Only 25 percent said they plan to invest significantly in improving online procurement, even though this was identified as a top priority.

While all respondents stated the importance of e-commerce, most still feel encumbered by major barriers to development—including costs of implementation, lack of proven benefits and industry standards, and more pressing corporate priorities, plus not being up to speed on key privacy, security, legal and intellectual property issues.

Not that the survey is all gloom. A majority said they were investing far more in e-business now than they were a year ago and devoting more senior management oversight to e-efforts. Nearly half of the participants have full-time e-business development units, another big increase over last year. That buy-in from corporate leadership has allowed CIOs to invest in new technology and e-marketing.

The future will be a major game of catch-up as global corporate battleships strive to turn themselves into e-business juggernauts. It's up to the CIO to become the captain of the corporate battleship. The stakes are too high in the new economy.

Wayne L. Levy

President and CEO
IDG Communications Inc.

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Reader Feedback

REALISTICALLY SPEAKING

I enjoyed Polly Schneider's "Another Trip to Hell" article [*CIO*, Feb. 15, 2000]. We regularly see similar cases as we help organizations invest, acquire and deploy IT projects. Developing systems is not about matching the latest technology with vague, evasive or fluid operation requirements; it is really about managing the risks involved. It isn't very often that projects start—and stay with—meaningful cost, schedule and performance "success" measures. It is less often that project cost, schedule and performance risks are realistically acknowledged, monitored and managed throughout the project.

Eben Townes • President • Acquisition Solutions • Chantilly, Va. • eben.townes@acqsolinc.com

SLOW DOWN, WE MOVE TOO FAST

I have never responded to a magazine article before, but when I read "Buckle Up" [Difference Engine, *CIO*, March 1, 2000], it struck a deep chord with me.

How true it is that we need more simplicity in this world of one distraction after another. I am the IS manager for a \$50 million company. About a year ago I was so stressed out with my job and with everything coming at me at once that I finally said, "Enough!" and packed my bags, jumped in my car and took off for a week to get away from everything. I traveled to various places, camping along the way. I had no computer, no internet and no television. Unfortunately, I still had to carry my cell phone and at one point found myself diagnosing computer problems at 10,000 feet on top of Mt. Graham in Arizona. But for the most part I had peace; I had time to think with no meetings or rigid schedules.

It was one of the most glorious weeks of my life. Your article convinced me that I need to do it again.

Gary Larson
IS Manager
Lagoon Corp.
Farmington, Utah
glarson@lagoonpark.com

Total Leadership

Playing Defense

No one is immune to the dangers of an overly political environment. The difference between success and failure is having a solid political defense.

BY CHRISTOPHER HOENIG

IT WILL HAPPEN. Sometime tomorrow in your career you will find yourself in a political battle. It will be a battle, and you will lose. The difference between success and failure is having a solid political defense.

A recent research study found that 70% of all executives who were asked to describe their political environment as "overly political" or "too political" were in the top 10% of the list of executives who were asked to describe their political environment as "overly political" or "too political."

So the next time you are in a political battle, remember this: You are not alone. Most executives are in the same boat. And if you are in the same boat, you are not alone.

It doesn't seem like it, but the political environment is a very real and very dangerous place. It is a place where the rules are different, and the stakes are high. It is a place where the only way to survive is to have a solid political defense.

LEADERSHIP LONG OVERDUE

Christopher Hoenig's Total Leadership column ["Playing Defense," *CIO*, March 1, 2000] was interesting, particularly in light of my own experience in the military. As a naval officer, I once made the assumption that I could be above politics, that I could survive and flourish based on merit, track record and reputation, even though I should have known better.

Hoenig is exactly on point. Too bad this article didn't appear 15 years ago. It would have saved me and many like me from an abbreviated

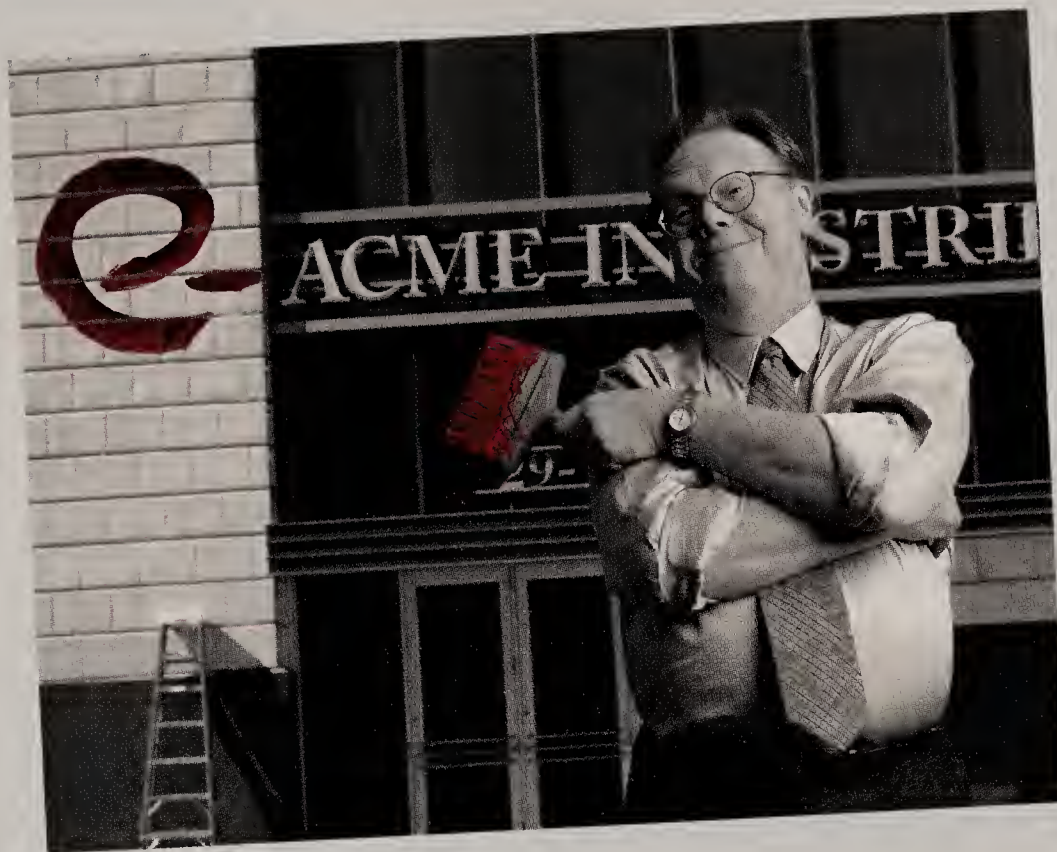
career. During the downsizing that hit the Navy in the early to mid-'90s, in my specialty—intelligence—only those with solid, well-tuned political connections survived. The rest perished, regardless of operational record.

Subsequent to my retirement from active duty, I wrote an essay on leadership that I submitted for publication in the *Naval Intelligence Professionals Quarterly* in 1995. Although I was told it would be published, it never saw the light of day. I am sure that was a politically inspired decision since the article appeared to shoot the then-director of naval intelligence right between the eyes (which was more or less by design). In addition, if you were to strip out the references to Navy and government civilians in my article, the principles would be as valid in a corporate environment as in the military.

As a result of my conditioning and experience in the military, I'm very sensitive to the philosophy and practice, or lack thereof, of leadership. As a LAN analyst at a large national corporation, I suffer through banners and slogans stressing leadership posted in a workplace totally bereft of anything even slightly resembling leadership no matter how you define it.

Your emphasis on the subject of leadership in your magazine is as rewarding as it is timely and desperately needed in the corporate environment.

Steve Kelly
LAN Analyst
United Health Care
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ERP: ALIVE & KICKING

I agree with your assessment that ERP-like systems are far from dead ["Long Live ERP," *CIO*, March 1, 2000]. Such integration of business functions and information leads to productivity and intelligence gains that are too valuable to

business practices that help them remain competitive and differentiate themselves.

James A. McGeady
Product Marketing Manager
Account4.com
Newton, Mass.
jmcgeady@Account4.com

While ERP systems may help organizations achieve control and data standards, they are often too rigid to implement successfully.

a company trying to stay competitive.

I have seen the internet lead to two significant changes:

- ERP concepts are being applied to new markets—namely professional services automation (PSA).
- The flexibility and centralization of web-based applications increases the odds of a successful implementation.

PSA software helps organizations integrate key business processes including (sales) opportunity management, project estimating, engagement management, staffing, resource assignments, time and expense reporting, and invoicing. With the ongoing IT staffing crisis, a just-in-time mentality has emerged in these organizations, which means that they need to see further up the services pipeline and become tightly aligned with their suppliers—of people. Due to the geographically dispersed nature of these businesses, this would not be possible without web-based applications.

While ERP systems may help organizations achieve control and data standards, they are often too rigid to implement successfully. We have found with our breed of customer that process-neutral applications that are easily adapted (XML- and HTML-based) provide the flexibility needed to minimize the culture shock associated with these pervasive systems and also serve to truly support

Tom Davenport's recent column on the long life of ERP systems struck home with me. My company builds and delivers dispatching and records systems for public safety agencies (the city of Boston is one of my clients).

Typically, public safety consumes 60 percent to 75 percent of a local government's resources (excluding education), so the deployment and activities of these folks is both a safety and a financial issue for local government managers. In Boston, for instance, public safety agencies employ more than 5,000 people and have a budget of more than \$300 million.

We face particular competition from specialty systems that are built around one or two business functions, while our systems attempt to be what could be considered an ERP system for public safety departments (that is, all the information you need to run a public safety agency except the payroll and financial systems). We also face competition from internally developed PC-based systems (Access is very popular) that track one activity or resource but integrate with little else.

It is difficult to match the functionality of specialized software products that offer the luxury of short development cycles, the latest technology and

the ability to focus on the latest trends in their particular specialty. The integrated solution is seldom as sexy as the latest standalone product. Over the years, we have developed fairly standard interfaces to the most common specialty products, but as these companies get larger, they tend to see us as competition as they move to become a more generalized vendor. Many of our competitors started out as niche players that later expanded their product lines via development, merger or acquisition.

It is interesting that Davenport's article mentions business-to-business interfaces: The leading public safety trade association is undertaking a major project to develop standards that will allow public safety systems supplied by different vendors to talk to each other in standardized ways. (For instance, the Boston Fire Department will use a Cambridge fire unit if all of their nearby units are busy—but this "process" requires the use of a telephone and has not changed for approximately 100 years.)

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CORRECTION

Because of a production error, the wrong photograph was published in the April 1, 2000, edition of "On the Move" (Page 48). The correct photo of Ted



Dellavecchia, who recently joined Starbucks as its senior vice president and CIO, is shown here. We apologize for the error.

WHAT DO YOU THINK?

Send your thoughts and feedback to letters@cio.com. Letters may be edited for length or clarity.



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trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Katherine Noyes

Holy Technology!

TO CELEBRATE THE 2,000th anniversary of Jesus' birth, the city of Rome is holding a jubilee that includes cultural exhibits, family events, World Youth Day and Masses celebrated by the Pope. The 13-month celebration began on Dec. 24, 1999. It's a momentous event for worshipers, and the jubilee's orchestrators don't want technical or logistical difficulties to diminish their ability to worship. Toward that end, they have developed the Pilgrim Card, which they hope will give travelers "peace of mind in [their] stay devoted to faith, conversion and prayer."

With its magnetically encoded strip, much like that on a credit card, the Pilgrim Card gives holders access to transportation in Rome, acts as a prepaid phone card and allows access to medical insurance. A card costs 65,000 Italian lira, or about \$32. All visitors need to do is

provide the jubilee's Central Committee with their personal information, length of stay, itinerary and medical conditions. Visit www.vatican.com or www.jubil2000.org.



SMART APPLIANCES

What's Cooking?

AFTER A LONG DAY at the office, who among us couldn't use a little help in the kitchen? Two new innovations are using IT to make your cooking time more efficient and effective.

First we have The Intelligent Microwave Oven, developed by Kit Yam, an associate research professor at the Department of Food Science at Rutgers University in New Brunswick, N.J. Unlike traditional microwave ovens, which can leave some foods soggy, or conventional ovens, which can take a long time to cook, Yam's device uses a combination of heating modes to obtain optimal results. "By using a combination of microwave, convective heat and radiant heat, we can have the best of both the speed and quality," says Yam. And that's not all: The infopliance also features a bar-code scanner that can read package information from the food about to be cooked. Rutgers is currently working with food companies and bar-code manufacturers so that bar codes will include information about nutrition and cooking instructions. Once that happens, the oven will be able to display the information.

Commercial units of The Intelligent Microwave Oven **Continued on Page 38**

"FRANKLY, I COULD GET A MARTIAN HIRED IF I TRIED."

—Nancy Albertini, chief executive of Taylor Winfield, a talent search firm specializing in high technology



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Continued from Page 36

What's Cooking?

may be available within a year or two, priced less than \$1,000.

Meanwhile, CMi Worldwide's internet-enabled iCEBOX lets you send e-mail, shop online, watch television and play audio and video CDs—all while keeping an eye on those cookies in the oven. With the addition of a video camera, it can act as your second pair of eyes anywhere in the house, allowing you to monitor Junior sleeping upstairs, for instance.

The iCEBOX is shaped like a small television and weighs only 16 pounds. It is due in July for about \$499. Visit www.cmiworldwide.com.

—Kelli Botta

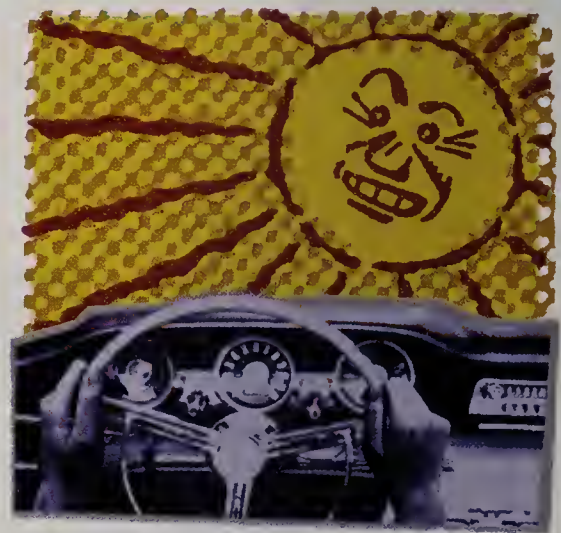
ANTI-GLARE TECHNOLOGY

Don't Let There Be Light

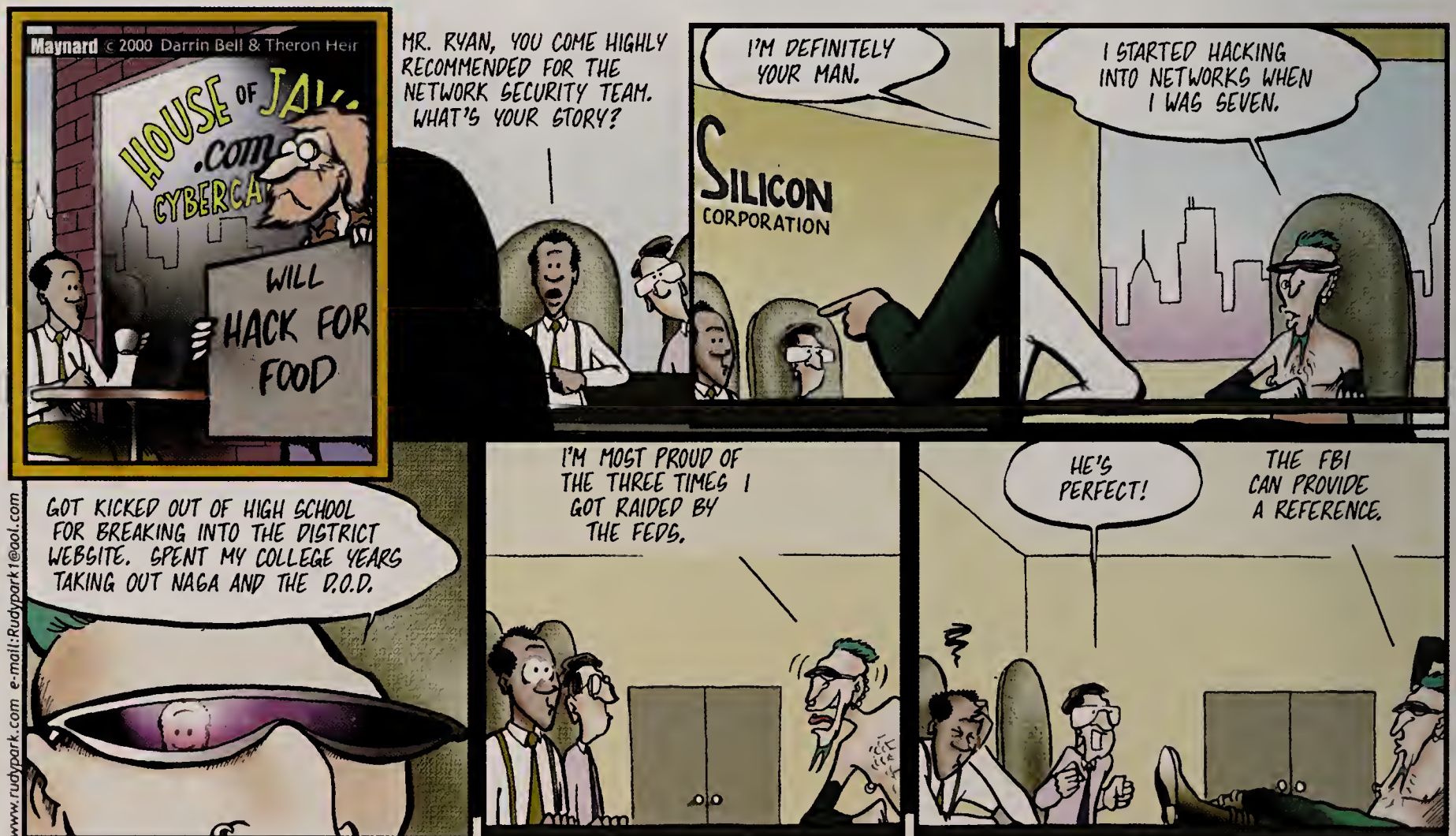
DRIVING INTO A rising or setting sun can be temporarily blinding—and dangerous. But a new LCD film might someday allow the development of goggles or a rearview mirror that can screen out glare and still allow a driver to see.

The new material is a specially constructed sandwich of liquid crystal and two sheets of glass. A dab of red dye enhances the liquid crystal's ability to reduce glare or intense light sources. "The film protects against continuous, long-term light that's below the level that will permanently damage the human eye but still intense enough to make seeing impossible," says Iam Choon Khoo, a professor of electrical engineering at Penn State University in State College, Pa., and the film's chief developer.

Other than car and truck drivers, the anti-glare film could also help pilots, athletes and book-addicted sunbathers, as well as optical sensors and optical communications equipment.



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By the Numbers

Compiled by
Derek Slater

Net Sales and Marketing

The American Productivity and Quality Center (APQC) recently concluded a benchmarking study comparing online sales and marketing processes at seven identified best practice companies ("partners") against a group of companies looking to improve their practices in this area ("sponsors"). The selected results below suggest that the average company relies too heavily on tracking hit and page-view data, when more specific and substantive measures of online behavior are available. Providing a personalized experience for online customers also differentiates the leaders from the laggards.

Methods used to understand online customers	Partners	Sponsors
Conduct online customer satisfaction surveys	100%	31%
Capture demographic information through online registration	71%	54%
Distribute customer surveys by e-mail	71%	23%
Regularly conduct market research	62%	86%

How online customer information is integrated into overall business operations	Partners	Sponsors
Personalizing customer information online	100%	42%
Deploying new products/services online	86%	67%
Developing internet-specific products/services	86%	58%

Metrics used to track online customer behavior	Partners	Sponsors
Hits	71%	85%
Page views/sessions	71%	69%
Orders	71%	31%
Unique visits	71%	23%
Revenue	57%	23%
Pathing/links followed	43%	15%

SOURCE: THE AMERICAN PRODUCTIVITY AND QUALITY CENTER IN HOUSTON



Best Practices for IT

1. Build a standards-based, open architecture for net commerce. This practice provides two advantages. First, it lowers the cost of doing e-business. Second, it provides the greatest flexibility for future capacity growth. "Projecting site usage has become an arcane art," says Ron Webb, project leader for the APQC study. "To ensure proper architecture for the future, excess capacity and failover routines [procedures to follow when a server goes down] have to be built into the systems."

2. Think way ahead. Webb says many of the partner organizations forecast technology changes at least two years in advance. That's clearly difficult in a time of rapid technological change, but online leaders recognize that it's the only way to attempt to stay ahead of the curve.

Suggest future topics to
numbers@cio.com

"IT APPEARS TO BE ONLY A MATTER OF TIME BEFORE THE INTERNET BECOMES THE PRIME VENUE FOR THE TRILLIONS OF DOLLARS OF BUSINESS-TO-BUSINESS COMMERCE CONDUCTED EVERY YEAR."

—Federal Reserve Board Chairman Alan Greenspan

EAI

B2B

B2C

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P E R I P H E R A L S

Power of the People

WHAT IF ALL THE ENERGY you expend typing away on your laptop were stored for your benefit? Thanks to a crafty Compaq Computer Corp. employee, it could happen. Adrian Crisan, a software engineer at the company's Houston headquarters, has devised a way to harness the pitter-patter of your fingers to recharge laptop batteries.

The technology works like this: Small magnets are mounted on each key, and a coil is mounted on both ends of the magnets. When the typist hits a key, the magnet moves across the coils and generates a current. The currents from the tapped keys travel to a pump that charges the computer's battery. The more the user types, the more electricity the keys generate.

Crisan's innovation could increase a laptop's operating time or reduce the size of its battery, thus resulting in a lighter computer, according to the abstract he and Compaq filed with the U.S. Patent and Trademark Office. Though it sounds like a promising concept, there's been no word yet from Compaq on when the technology will find its way to your desk.

"The one thing that is certain is that anyone who uses the phrase outside the box is as deeply inside the box as a person can be."

—Michael Lewis, writing in The New York Times

HOT TOPIC**CUSTOMER RELATIONSHIP MANAGEMENT**

All Answers, All the Time

By Mindy Blodgett

Imagine you've found the perfect site on the web to order something special for your mom on Mother's Day. Before ordering, though, you have a few questions and can't find answers on the website's FAQ list. You try to contact the company by both phone and e-mail but end up on hold and receive no electronic response. What do you do? If you're like many, you give up and move on to another site.

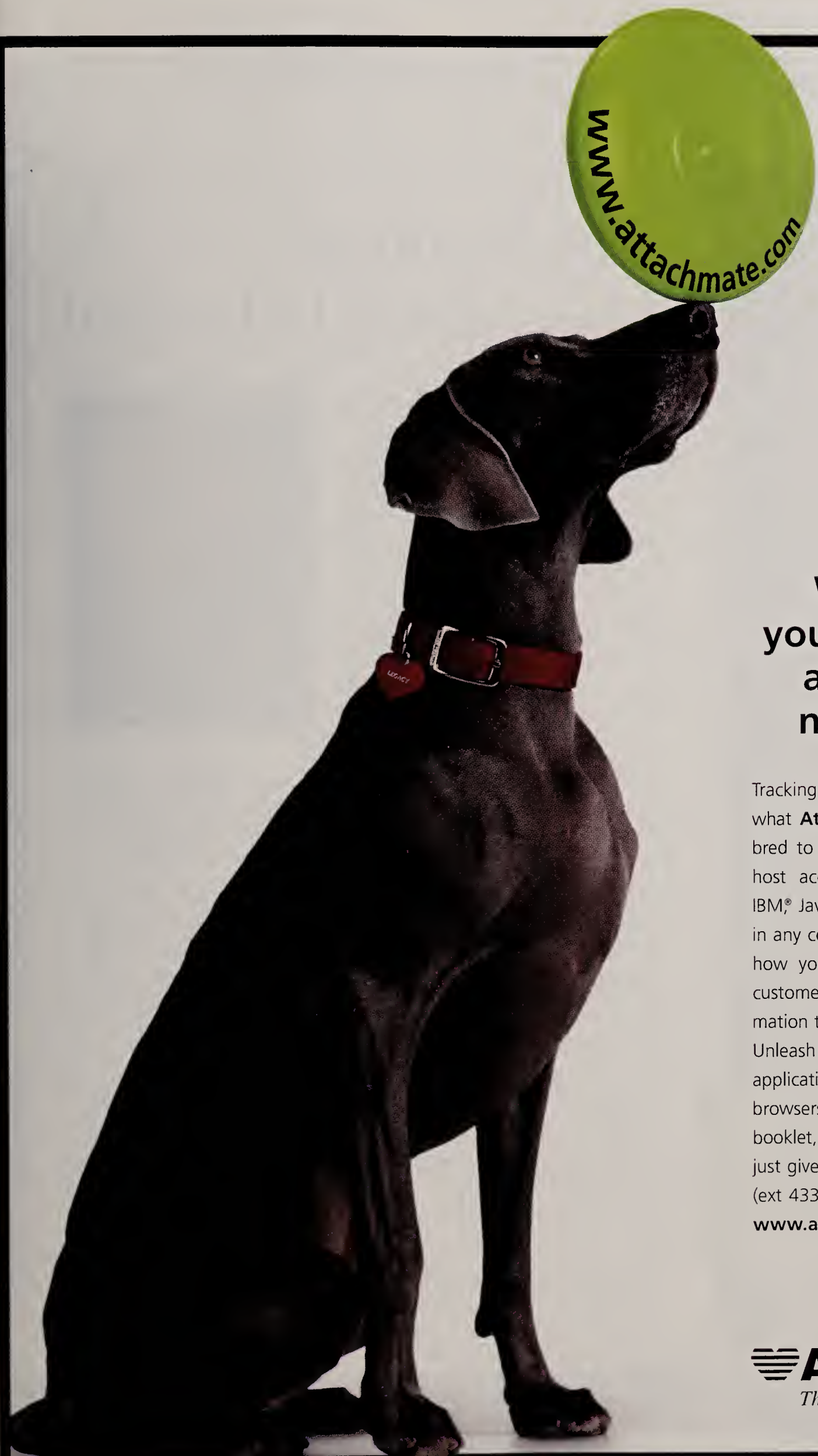
That scenario is just about every online vendor's worst nightmare. To help avoid it, some companies are increasingly outsourcing their customer service contacts to application service providers (ASPs), which step in to field the low-level, initial contacts. Many questions at this early stage can be easily dispatched before they escalate into full-blown customer complaints, customer relationship management experts say, so it's cheaper to

handle them as quickly as possible.

IslandData Corp. is one such ASP that can handle these contacts. IslandData execs claim the need is great, citing reports that show that 70 percent of Fortune 1000 companies do not respond to customers' e-mails. The IslandData program, ExpressResponse, works by providing clients with a 24/7 service that fields customer questions and responds within 10 seconds.

Norman M. Williams, CEO for the Carlsbad, Calif.-based company, says the service works by tapping into the client's knowledge database. IslandData works with its customers to build the database from existing documents, such as FAQ sheets. The automated service then reads and analyzes user inquiries and answers questions on the best course of action, according to Williams.

Automating responses through this type of service "allows our customers to handle huge increases in e-mail without having a major impact on their existing staffing levels," Williams says. For more information, visit www.islanddata.com.



Who says you can't teach an old dog new tricks?

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WIRED TEENS

So Much for Paper Routes...

AS IF COMPANIES don't have enough to worry about these days, it turns out executives need to watch their backs to make sure their neighbors' kids aren't stepping into their marketplace.

According to a recent survey of 101 San Diego County high school seniors, 8 percent of students are running an online business and 56 percent are planning to start one in the near future. The survey, performed by Computer Economics, an independent research firm in Carlsbad, Calif., found that developing businesses included internet services like network solutions, website hosting or design and development.

What may this entrepreneurial spirit portend for businesses run by people who don't need a fake ID to buy a six-pack? "Before the internet, established businesses did not face competition from a teen's paper route or even a small local business run by a teen," says Catherine Huneke, a senior research analyst at Computer Economics. "But by using a professional-looking website and e-mail to interface with clients, teens can overcome the credibility issues that are likely to result from their [youth] and lack of experience."

—Meg Mitchell



INTERVIEW

The Mythical Man-Month Debunked

TWENTY-FIVE YEARS AGO, computer scientist Fred P. Brooks Jr. wrote *The Mythical Man Month: Essays on Software Engineering* (Addison Wesley, 1975), in which he established his now widely accepted principle that, in programming, as in pregnancy, nature must be allowed to take its course. Specifically, Brooks argued that if a programming project was behind schedule, adding more programmers to the project made as much sense as adding more women to a given pregnancy. In other words, it made no sense at all.

Brooks' "law" was widely embraced in the IS community, but it has since found a challenger. Steve McConnell, president and chief software engineer of Construx Software in Bellevue, Wash., and editor-in-chief of the journal *IEEE Software*, recently wrote an essay debunking Brooks' theory. *CIO* asked McConnell to explain.



Steve McConnell
disputes Brooks' "law"

Q: What is Brooks' justification for his theory?

A: Brooks believes that some tasks are partitionable, and some are not. For instance, if the task is picking cotton and you add nine people, you get nine times the productivity. But other tasks, such as having a baby, cannot be so partitioned. He believes it's absurd to "throw" additional programmers at a job that's behind schedule because of the high overhead expense of educating them and bringing them up to speed on that particular project.

Why do you disagree?

For what Brooks says to be true, the amount of effort lost to training new staff must exceed their productivity when, in fact, they become productive. Yet, even insofar as this might be true, it obviously wouldn't apply to the early stages of the project, only to the latter stages, and would apply to only relatively few people. Programming is more partitionable than Brooks thinks.

What is the solution to programming projects that are behind schedule?

The vast majority of programmers don't have any idea how to track what they are doing. They think they are in the final stages when they still have a long way to go. For a project that's already behind schedule, adding new programmers can only help it from falling behind even further. But the real solution is to establish sound quantitative measurements for estimation and tracking.

—Thomas G. Dolan



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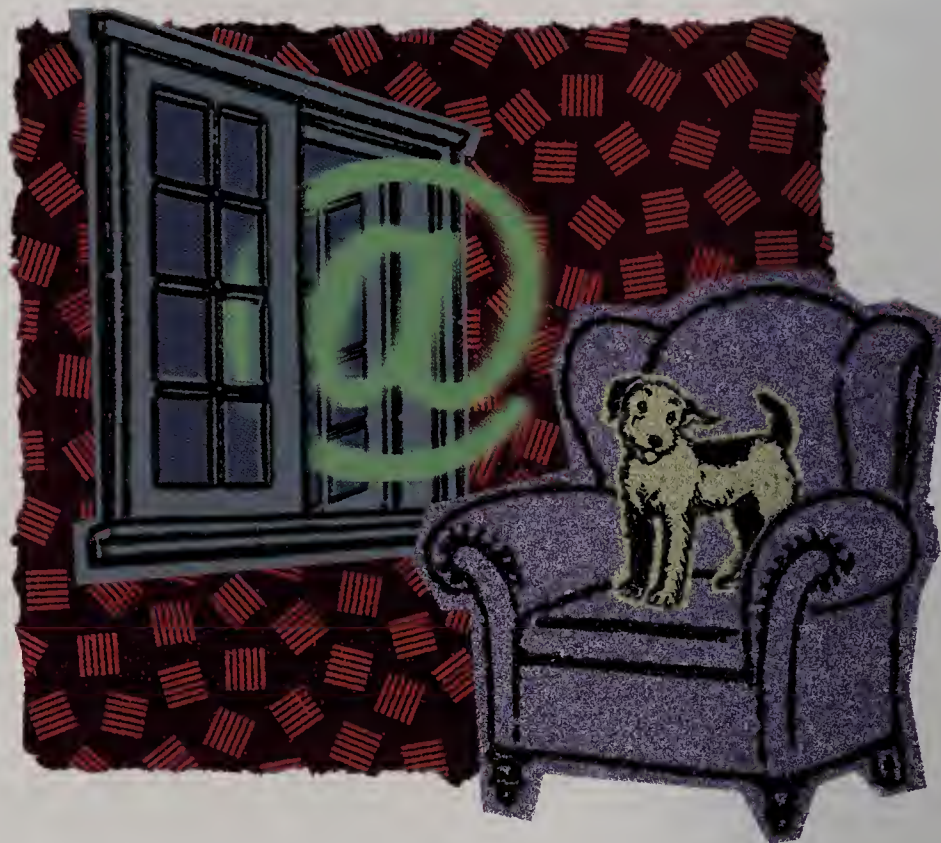
REMOTE ACCESS

The Home Field Advantage

REMOTE ACCESS to company networks has long been something of a privilege at many companies, conferred only on those who make special arrangements for working from home. Today, however, a growing number of organizations are building corporate portals on the web to allow all employees to access corporate networks from home.

Take Ford Motor Co., which recently announced plans to create a corporate portal for its more than 350,000 employees worldwide. For \$5 a month, employees can get Hewlett-Packard computers and printers and internet access through MCI Worldcom's UUNET; at retail prices, such a setup could cost more than \$1,000 per employee. The program will be administered by PeoplePC of San Francisco.

A day after Ford's February announcement, Delta Air Lines



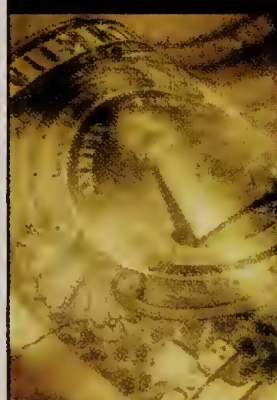
disclosed similar plans. The Atlanta-based company is still considering its PC system but will use AT&T's Private Label IP Portfolio to provide employees with internet/DeltaNet access. The service will cost at most \$12 per month for 36 months.

In a survey of 300 large organizations, Boston-based con-

sultancy Delphi Group found that 55 percent of them were working on similar portals, and 25 percent more were planning to do so within the next two years. But the trend isn't necessarily entirely good for employees. "Though Ford and Delta are currently taking the high road, there are two privacy issues at stake," warns Hadley Reynolds, Delphi's research director. "The first is the obvious one: how much an employer should know about its workers. The second is that the selling of consumer internet habits is big business. Within a few years, companies like Ford and Delta may be able to make more selling the internet data about their employees than they do their regular businesses."

—Thomas G. Dolan

HOT TOPIC



E-COMMERCE

A Day in the Limelight

By Carol Hildebrand

One doesn't generally think of the CIO career track as being a sure path to fame and celebrity, but stranger things have happened. After all, it's how Pete Solvik ended up at the White House.

When internet hackers shut down a number of popular e-commerce sites last January, President Clinton convened a hastily assembled council on internet security. Solvik, the CIO of networking giant Cisco Systems in San Jose, Calif., was one of those summoned. "It was a kick. Twenty-four hours beforehand I had no clue [that I was going to Washington, D.C.]—I had to take the red-eye to get there on time," he says.

Next highlight: sitting between Clinton and U.S. Attorney General Janet Reno at a meeting on security. Clinton was no figurehead, either, says Solvik. "He rolled up his sleeves and ran that meeting for two hours," says Solvik, who was impressed by the prez's intelligence and knowledgeability.

But the very best thing, he says, was when his kids saw him on TV, delivering the statement that represented the technology industry's interests for the council. It's not easy to explain what a CIO does to such constituencies as kids or grandparents; the title really doesn't define the position as does that of, say, doctor or lawyer. But seeing dad on TV sitting next to the president is something anybody can grasp. "My kids were jumping out of their skin," says Solvik with a laugh.

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On the Move

Compiled
by Tom Field

CIO Shakeups at Wal-Mart, Dell

RANDY MOTT, longtime CIO at Wal-Mart, has resigned to become CIO of Dell Computer Corp., replacing another longtime CIO, Jerry Gregoire, who quit last fall to raise horses.

Mott, 43, had been employed by Bentonville, Ark.-based Wal-Mart since 1978, holding various technical and management positions before being named senior vice president and CIO in 1994. Under Mott's IT direction, Wal-Mart became renowned for its pioneering use of the internet to link customers,

stores and suppliers in a vital supply chain and distribution network. Mott emerged as one of the best-known and respected CIOs in the business.

At Dell, headquartered in Round Rock, Texas, Mott will be charged with managing the company's IT infrastructure, including the web-based applications that support the company's state-of-the-art sales, service and supply chain processes. As senior vice president and CIO, Mott will serve on Dell's executive committee and will report to Vice Chairman Kevin Rollins in the CEO's office.

In announcing Mott's appointment, Rollins said in a prepared statement, "We believe [Mott] will strengthen Dell's capabilities as we continue to integrate

the internet and world wide web into our direct-to-the-customer business model. His contribution to Wal-Mart's growth and his extensive global experience also will add significant depth to our management team."

Although Jim Schneider, Dell's senior vice president of finance, had been serving as interim CIO, Mott really is the heir to Gregoire, who resigned from the company last October. Gregoire, 48, joined Dell as CIO in 1996, rising to senior vice president in 1999. Under his direction, Dell developed the web-based applications that put the company on the e-commerce map as an early innovator.

Replacing Mott at Wal-Mart is Kevin Turner, who was the assistant CIO since 1998. Turner, 34, has been employed at Wal-Mart since 1985, working as a store employee, a corporate auditor and an IS staffer. Under Mott's direction, Turner was involved in the company's Y2K remediation efforts as well as integrating Wal-Mart's information systems with those of the companies it acquired overseas. In 1997, Turner received Wal-Mart's own Sam M. Walton Entrepreneur of the Year Award, which recognizes employees who best exemplify the spirit of the company's founder.



Player's Guide

Mintu Bachann

has joined EqualFooting.com, a Dulles, Va.-based B-to-B startup, as CIO. Formerly, Bachann worked at Oracle and Sun Microsystems. EqualFooting.com serves small business owners as a marketplace for industrial supplies and equipment.

Michael C. Crowley

is the new vice president and CIO of Campbell Soup Co. in Camden, N.J. Formerly CIO of Rich Products Corp. in Buffalo, N.Y., Crowley joined Campbell in April 1999 as a divisional vice president of IS. In his new role he will have global responsibility for Campbell's use of IT.

Rina Singer Delmonico

Formerly senior vice president and CIO of Schwinn/GT Corp. of Boulder, Colo., Delmonico has left that position to concentrate full time on her duties as founder and CEO of REN Inc., an IT consulting firm based in Denver.

Ejaz A. Khan

has been appointed vice president, controller and CIO of Vulcan Materials Co., a Birmingham, Ala.-based industrial materials manufacturer. A graduate of both MIT and the Wharton School of the University of Pennsylvania, Khan has been employed at Vulcan in a variety of capacities since 1979.

Q:

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Such awkward situations will soon be a thing of the past if Captivate Network has its way. The Westford, Mass.-based company is busy deploying its information display screens in elevators throughout Boston, Chicago, New York City and Stamford, Conn. Each one delivers the latest internet-fed news headlines, stock reports, traffic conditions, weather and sports updates to elevator passengers via 10- or 12-inch terminal screens. Featured web content providers include Accuweather, *The New York Times*, Reuters and Smart Traveler. Currently, Captivate has installed the screens in about 36 buildings so far, for a total of about 400 elevators. Next, Captivate plans to bring its screens to Los Angeles, San Francisco and Dallas, followed by Houston, Atlanta and Washington, D.C.

With weather and news information right in front of you on your next elevator ride, you may even be inspired to chat with fellow passengers. Just be sure you don't miss your floor....

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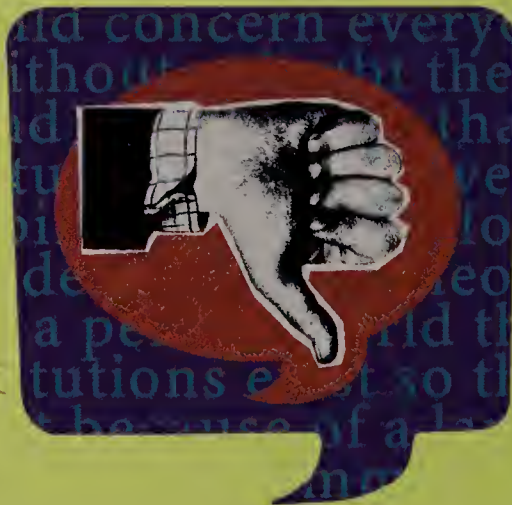


WEB GRAFFITI

Tell It Like It Is

IMAGINE YOU'RE READING an article at CNBC.com and think the reporter's analysis is a crock. Instead of exiting the page and entering a chat room (who's got time for that?), why not leave a comment right there on the page for all to see?

Collaboration software from Third Voice is allowing surfers to easily and instantly speak their mind at any website, on any public page. Just select the text in question and click your right mouse button; a window then pops up in which you can type



your comment and let other readers feel your pain. To read a discussion thread, users click on the Third Voice icon on their browser toolbar, which brings them to a notes viewer. Want to play? Go to www.thirdvoice.com and download the software for free.

Third Voice is not just the latest consumer toy. Some businesses are setting up private discussion groups at the company's website, which restricts

message access to designated individuals. A dental equipment manufacturer is using Third Voice to post analyses at competitors' websites for employees to review.

Eng-Siong Tan, CEO and cofounder of Redwood City, Calif.-based Third Voice, isn't making a dime off the tool yet, but his latest release, Third Voice 2000, facilitates links in text to other related content and e-tailers, and Third Voice will get a cut of those transaction revenues.

As you would expect, a few large internet companies have griped that the software is unlawfully altering their content. Tan says his company has been free from legal hassles so far—and he doesn't believe there's a case, since users download the software themselves and can turn the Third Voice function on or off as they choose. "We really see ourselves as a service to empower users," he says.



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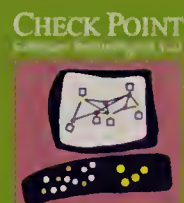


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Supply Chain Management

Bernard Teiling, assistant vice president of business process integration at Nestlé SA in Vevey, Switzerland, answered readers' questions on CIO.com about his area of expertise, supply chain management. Here's what he had to say.

Q: We are revamping our short-term forecasting applications and processes to establish more-reliable forecasts. We expect the forecast to drive our supply chain processes. What things should we consider as we manage this transition? Is it realistic to think short-term forecasts can be reliable enough to drive the supply chain?

A: This is a classic question. I would contend that forecasts are never sufficiently reliable. They are designed to reduce uncertainty, and this can be statistically verified. Most important to realize is that a good part of the supply chain can be managed with low or zero stock. In that case, the actual demand is replacing the short-term forecast: Integration, information systems and speed of communication through the entire (and extended) supply chain becomes critical, of course.

Q: I am new to the consulting industry and am trying to quickly learn as much as possible. My question is simple: What is supply chain management, and why is it so important?

A: Supply chain management (SCM) is managing the flow of goods, services and information between suppliers, manufacturers, wholesalers, distributors, stores, consumers and end users. The complexity and cost of supply chains have significantly and continuously increased in the past two decades. At the same time, companies have realized that their customers' satisfaction (or dissatisfaction) was linked to the performance of their supply chains. On the other hand, different companies' (and industrywide) initiatives have shown the tremendous benefits of just-in-time, zero-stock, total quality and category management—just to name a few steps into the business integration potential. SCM is both a source of competitive advantage and a lever for profit margin. If you are not good at SCM, somebody else will be.



ILLUSTRATION BY CHRIS LENSCH

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Ask the Expert

Q: What supply chain assessment tools are available, and which ones would you recommend for generic, industrywide application? Which tools have you used for supply chain assessment?

A: At Nestlé, the three main ways of assessing a supply chain make up the key performance indicators (KPIs), which are standard to the company. These KPIs are customer service levels, cost of distribution and cost of wastes. We have developed different database and data warehousing systems to automate the capture and calculation of these KPIs. We have also designed a self-assessment checklist that supply chain managers can use to evaluate themselves and where their organizations stand within a table of process maturity and alignment. A selection of internal business cases is used to communicate the best practices in supply chain management.

Q: I am employed by the world's second-largest cement company, and I work on the business process integration team. This year we have formed a task force to evaluate our business processes and decrease our supply chain costs by at least 10 percent. We have consulted with a number of industry experts, and, frankly, now I am more confused than informed. Our quest is to reengineer our processes and incorporate e-business solutions where applicable, and it also includes automation such as paperless billing of lading and invoices. What starting point will give us the biggest bang for our buck?

A: It's hard to answer your question without knowing your existing degree of automation and organizational integration, but let me try. If you have a solid base of legacy systems (client/server), no matter how good they are, they are or will rapidly become obsolete.

Web-based applications may deliver immediate benefits by providing an integration of the process with the business partners:

It is an instant combination of increasing people communication (the people process) and technological solution (the extranets). The two ends of the supply chain are good places to get started: e-procurement and e-sales (promotions). The best way to determine the priorities is to have the initiatives pushed by the CEO throughout the governance system so that they're in line with the business strategy. I estimate that the level of improvements that have been accomplished in the

past 10 years can be repeated again, and much faster this time (say in two to three years). The challenge is to put in place a change management program, allowing the operations to continuously improve and deliver tangible benefits in the short term. Quick wins and benefits from long-term directions are compatible.

Q: What is your plan to integrate the supply chain down through the manufacturing process? It seems that this is where the rubber meets the road, and it needs to be an integral part of the strategy.

A: The opportunities to integrate the processes of the supply chain are practically unlimited. At this time, we focus on different dimensions of the integration: the standards along the supply chain (for example, product coding or data structures) for procedures and information systems, and the geographic regionalizations and globalization, providing common processes (sourcing, manufacturing and distribution) for several countries within and across regional trade markets. Outsourcing and insourcing must be constantly reassessed with a strategic perspective. The integration must allow seamless co-manufacturing, co-packing—all sorts of collaborative working environments with the business partners. A new paradigm is emerging with the integration of business partners and the focus on the core processes. An IT infrastructure must be deployed to support these virtual companies.

Q: What are the expected relationships (if any) between ERP software tools and SCM software tools? It appears there is overlapping functionality offered in each. Are ERP and SCM vendors working on interfaces or strategic partnerships?

A: This is a good (and viscous) question. The big software players need to preserve their investments and keep their customers—in spite of the rapid obsolescence of their products. The battle is around the architectures and the business models. The right choices are critically important, although they are never absolutely right or wrong (only some have proved useful). There is an emerging paradigm, I think, where these tools will be more process centered than database centered, with an extended perspective beyond the boundaries of a given company. The capability to interface different systems through XML (or XML-like) standards, in theory, should create an environment in which companies could take advantage of the best of both worlds. The migration to this future environment is a little bit like the introduction of the e-mail system in the 1990s. **CIO**

If you would like to suggest an expert or a topic for this column, please e-mail Senior Writer Daintry Duffy at dduffy@cio.com.

Ask the Expert

Jane Zeletes, vice president of voice strategies at Englewood, Colo.-based Rhythms Netconnections, will be available to offer insight and advice on **DSL** (broadband) technology and the future of telecommunications in business. Post your questions now until May 15 at www2.cio.com/CIO/expert or e-mail questions to asktheexpert@cio.com.

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Home Team	3%	30 people	\$12M
Competition	0	0	\$0

Based on 1000-person staff, billable 200 days/year @ \$2000/day.

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those guys said your customers
buy this stuff. And you

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No, the

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Career Counsel

Mark Polansky Offers Advice to Aspiring CIOs and IT Managers

Opportunity Knocks

Q: My company was planning rapid expansion, which has turned out to be a lot slower than originally planned. Among other duties, I was responsible for making my company's legacy core system Y2K compliant. Shortly before the end of the year, both the corporate IT director and the MIS manager were let go and I was promoted to director of IT. The transition, while sudden and traumatic, has been smooth with no Y2K disasters or any other bumps in the road.

What is the best way to get up to speed in the areas previously handled by the IT director? I have the application and team management areas covered, but I want to know the best way to grow into this new position.

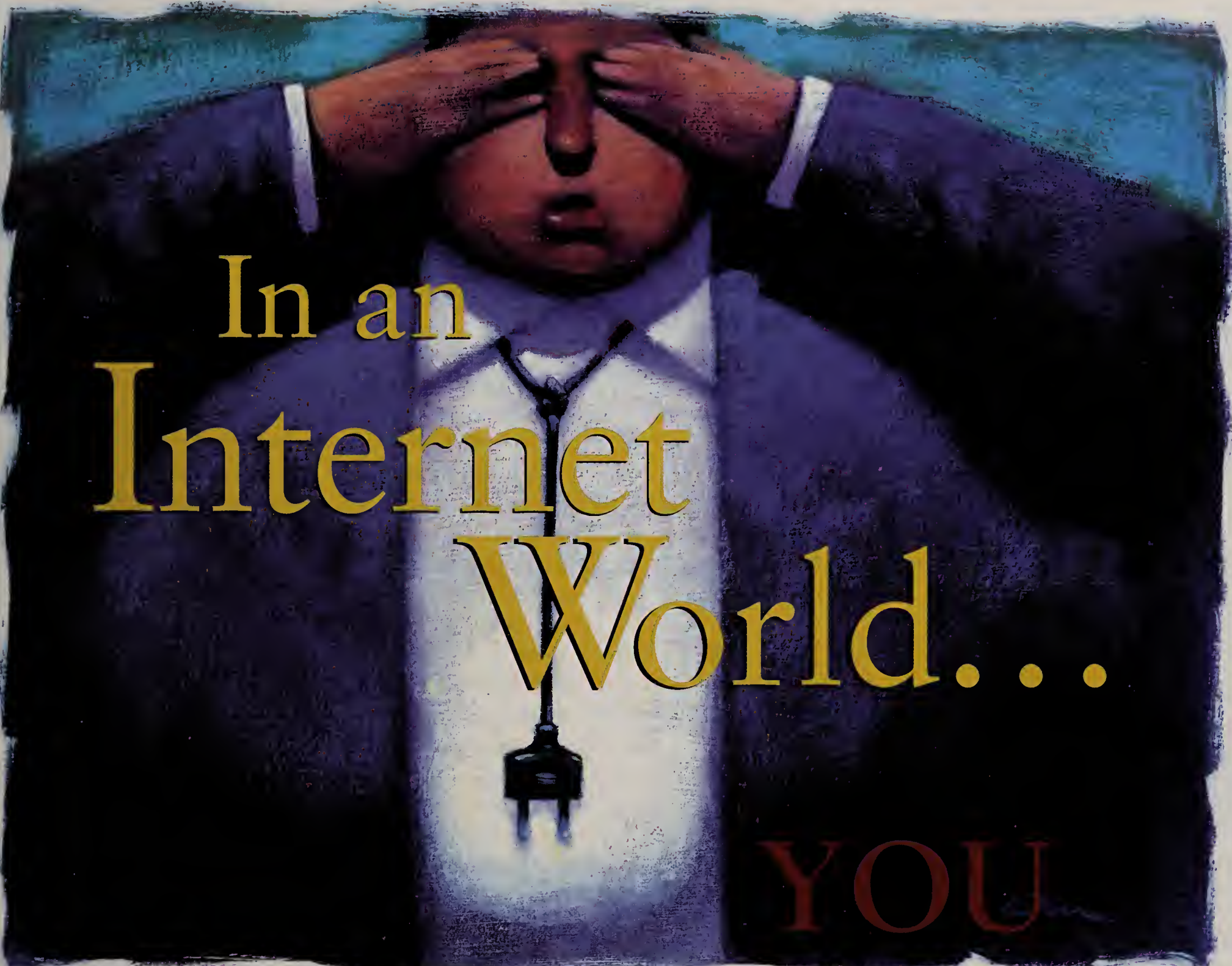
A: Congratulations. What a wonderful opportunity and a great question! First order of business is to ascertain why your predecessor and your former peer in technology and operations (the MIS manager) were dismissed. If the reasons are valid, then you can establish credibility and get some quick wins by quickly reversing or avoiding their errors of omission.

Next, find out what senior management truly thinks and



expects of IT: strategic element or operational overhead? If being a CIO is right for you, and if the opportunity to contribute to your company's top and bottom lines through technology-driven initiatives is there, then you've got a winner. In that case, get to know as much as you can about your company, its business plans and its business operations. Spend time out in the business units and the trenches learning first-hand about the business and its key processes. Establish a dialogue and a partnership perspective with the business and operational unit heads. Get some pilot projects going to establish an IT strategic plan that includes some exciting innovations.

However, if all this good stuff is moot, then simply be a great IT director for a while to establish your new level of operating management experience, and then decide when to move on if being a CIO is really what you want. In either case you will need to identify, from the outside or in, a good and trusted deputy



In an
Internet
World...

YOU

CAN'T HIDE
DOWNTIME

Delivering the
Promise of
Availability



Special Advertising Supplement

In an Internet World...

BY BRUCE HOARD

THE E-BUSINESS PHENOMENON has its own set of rules. Time-to-market is everything. Every business plan is perpetually on the verge of obsolescence. And the world runs on Internet time. This means that today there is only one time zone, and it's not EST or PDT, but NOW.

It's simple to tell Internet time—there's uptime and there's downtime. During uptime, companies transact business, serve



Delivering the Promise of Availability

their customers and plan for the future. During downtime, companies watch their customers click their way to a competitor's Web site. Future? What future?

IT managers look at downtime differently than they used to. Two years ago, production and continuity environments were separate entities. IT managers focused on minimizing downtime. If an outage did occur, they tried to effect

the earliest possible recovery. In the wake of an outage, providing 40% to 60% of a production processing capacity was enough to meet the needs of most companies. The costs of downtime were containable, and could be hidden from the outside world. Back then, it was sufficient to have this *Experience and React* approach.

But in the high-speed world of e-business, recovery must occur in seconds, or else be so transparent that no one else knows. Here the new paradigm is *Anticipate and Adjust*. Problems still occur, but now they must be neutralized before they have a serious impact. Ideally, your customers won't even know that something went wrong.

This seamless approach to business continuity is based on the expectation of infinite availability of IT service. Savvy customers expect IT service to be accessible and available anytime

YOU CAN'T HIDE DOWNTIME

from anywhere. . .and on their terms. Their expectations are infinite, but their patience is infinitesimal. There is no wiggle room; there are no excuses.

Infinite availability can only be delivered through a bulletproof end-to-end architecture based on four pillars: Capacity, Access, Performance and Availability. The production world has always dealt with the challenges associated with capacity, access and performance. But availability has been the chink in the armor—and without it, the other three pillars will crumble.

Backup shocker

The following fact may come as a shock to CIOs and other IT managers. They would do well to heed a 1999 Gartner Group report that states, "Time-to-recovery issues will force many organizations to redesign their backup and recovery methods for some critical applications. By 2000, 70% of Fortune 500 companies will implement replication-based backup methods for 10% of their data. The use of these data replication techniques will grow by more than 50% annually through 2001 and will increase in large organizations from less than 5% today to 25% by year-end 2000."

Infinite availability requires an array of high availability technologies, including remote mirroring, hot standby nodes, system replication,

multi-site load-balanced production sites, electronic vaults, standby operating systems, remote journaling and database shadowing. In this demanding environment, network connections have to be nearly

Just ask Computer.com. Two days after the Maynard, MA start-up spent \$3 million on advertising during Super Bowl 2000, a half-million people flocked to its Web site. . .which did not crash.

All this fanatical dedication to uptime is well-founded. With so many Web-based opportunities only a click away, customers won't wait for service. "You've got to be up all the time," says Mark Samuelson, an IT specialist with Aspen Consulting in Rolling Meadows, IL. "When a would-be customer is doing something on the Web, and the site is

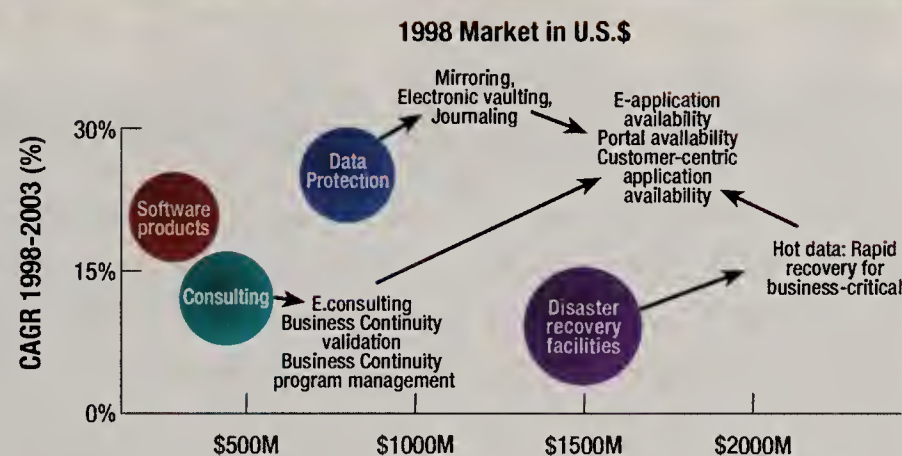
down, they will find another search engine or another retailer to buy from. Web sites have got to be up all of the time."

It's not enough just to have a reliable server, though. "Hardware goes bad no matter how much high availability they build into it," notes Samuelson. "Particularly with e-business, you need a good infrastructure, because it's not just one box, it's many. If a site goes down, you need to fail-over quickly."

As an example of how the rules of availability have changed, look at Charles Schwab. One of its maxims is to always be worthy of its customers' trust. That means it has to be available whenever its customers want to do business.

"It makes you long for the days of your nice little data center with one mainframe," says York. "The

TRENDS FOCUS ON AVAILABILITY



Source: Gartner Group

instantaneous, and availability solutions must be the equal of production environments.

"Customers want what they want when they want it, and they'd like it now," says Tonya York, vice president of business resumption services for brokerage firm Charles Schwab & Co., in San Francisco. "That's the power of the Internet. It's a great equalizer for consumers."

If there's one place that users expect the same characteristics—access, capacity and performance—that they are used to in their day-to-day systems, it's in backing up e-commerce applications. In these environments, scalability is an acute problem, because Web sites must be able to accommodate spikes that come after promotional campaigns spur increased interest in their products or services.

environment is very transparent, and with the Internet, our customers know when we're down, and how long we've been down." The situation is particularly acute at Schwab, because a number of its customers are in the media. "They are among the first to know if we have problems with availability."

During York's six years at Schwab, she has never been asked to perform a cost-benefit analysis of the

firm's business continuity services. She says it's not that Schwab doesn't want to strike the best deal it can for those services, but that the firm recognizes their value. "It's a top-down mindset," she notes. "I don't have to talk management into providing resumption services."

Web-hosting boom

One result of the move to e-business is the growing popularity of

Web hosting. According to market research firm Frost & Sullivan, the Web-hosting market in the United States will soar to \$4.04 billion during 2000, a 356% increase over the \$1.13 billion that was spent in 1999.

The allure of such a wide-open and highly lucrative market has created a modern-day gold rush, attracting a profusion of application service providers, telecommu-

Comdisco, Microsoft team for high-availability solutions

COMDISCO IS ENHANCING its relationship with Microsoft Corp. to offer a suite of services that will help customers such as Pennzoil Quaker State Co. achieve high availability of their mission-critical and Web-based applications running on the Windows NT and Windows 2000 platforms.

The agreement, which combines Microsoft's operating system and application expertise with Comdisco's best-in-class high availability and business continuity solutions, calls for the two companies to jointly develop and deliver solutions designed to ensure availability of Windows systems, applications and data.

Comdisco and Microsoft will deliver the services under the Microsoft Certified Support Center High Availability Services Agreement, formalizing work which was formerly done by the two companies on an independent but collaborative basis.

According to Mark Scully, Comdisco's VP, NT services, the idea for this agreement sprang from work that Comdisco and Microsoft did for Pennzoil. The company is a heavy Windows NT user with approximately 300 servers and between 5,000 and 6,000 users.

"While Comdisco was designing the Pennzoil architecture, a light bulb went on," says Scully, "and we realized production and recovery were becoming tightly integrated, giving Windows NT high availability credibility in the data center for mission-critical environments." Availability was designed in the architecture, policies, procedures and support capabilities.

Joseph Lindstrom, director of PSS (Product Support and Services) business development with Microsoft, agrees that this agreement is the culmination of work previously done

by the two companies working independently but collaboratively. "Going forward, the delivery will be much more seamless and integrated, in that joint Comdisco-Microsoft customers will have one-stop shopping for their availability needs," he says.

The alliance is good news to Britt Mayo, CIO of Pennzoil Quaker State. "Microsoft has long been a leader in cost-effective computing, and Comdisco has long been a leader in secure, recoverable computing," he says. "Together they form a potent force that provides secure and recoverable work at a Microsoft-level price point. Now we no longer have to choose between inexpensive and highly reliable, because we can have both."

Under terms of the agreement, Comdisco will be the single point of contact for high-availability solutions, but Microsoft will have a dedicated support team working side by side with Comdisco for the delivery of these services. Microsoft's dedicated support team will include named engineers with customer- and application-specific expertise, who will always be available for consultation.

Mayo, who is in charge of a global network based in Houston, believes the new deal will enhance the already solid relationship between Comdisco and Pennzoil Quaker State. Comdisco, he says, "is extremely flexible, and that's important because there are two ways you can approach the future. You can either predict it perfectly, or you can work with somebody who is flexible enough to adapt and change as unexpected things happen. I've always found the latter to be the easier approach.

"With Comdisco, when the unexpected happens, they're very good at working out ways to incorporate it into our program and our relationship."

nications carriers and other companies. Unlike the trend toward IT outsourcing, Web hosting is not just filling a niche; it is rapidly becoming the dominant paradigm.

This phenomenon is reminiscent of the Internet service boom of the 1990s, when every entrepreneur with a PC in their closet called themselves an ISP. But there is one significant difference. Web hosts require much more sophisticated infrastructures. The question is: Are they sophisticated enough to support all the needs of e-business users?

They had better be, because Web hosting represents the foundation of the e-business economy. This is the area where the costs of downtime cannot be hidden, the rock on which the hopes of promising companies may be dashed. A lot of ambitious dot-com companies are betting their futures on solutions that aren't robust enough to provide infinite availability.

businesses to Web hosts need more than just the basics. They require managed services with built-in availability.

the primary site fail.

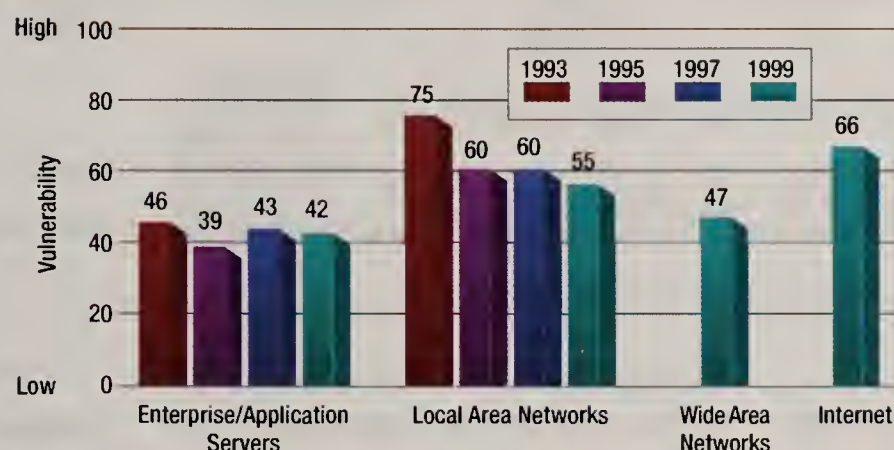
Of course, it is not only Internet start-ups that require high availability. It's just as critical to the bil-

lion-dollar corporation that may have up to 40 servers supporting its Web site and another 20 running its ERP application, plus another 300 servers enterprise-wide for its 10,000 users. As many as 400 servers may need to be managed, a process which will include security, recovery and availability. That's a lot of IT support, and there are not a lot of Web hosting companies ready to supply it.

"Every day, there is a new Web hosting firm coming online, and they are hosting the most vital thing in the IT inventory: the application," says David Tapper, a research analyst with the Networked Infrastructure Management Services program at International Data Corp., in Framingham, MA. "That's what you need recovery for. It's the heart of the whole system."

Many of these Web hosting firms are still in their formative stages. They are focusing on building the business, getting the real estate, acquiring bandwidth and putting up applications. Although they may have literally bulletproof walls in their 100,000-square-foot data centers, they are still not ready for infinite availability prime time. "As a user, if you have to take on any kind of Web-based application, if you do any e-commerce, you need security, recovery and high availability," says Tapper. "And these are the most complex set of all IT skills."

VULNERABILITY INDEX SCORES



Source: 1999 Comdisco Vulnerability Study

One step in the journey toward infinite availability on a cost-efficient basis is to make fail-over processors participate in the production hosting environment, rather than sit idle, waiting for an outage at the primary site. In this scenario, the mirrored site is actually supporting Web traffic, processing transactions and keeping databases synchronized with the primary site.

This approach is economical



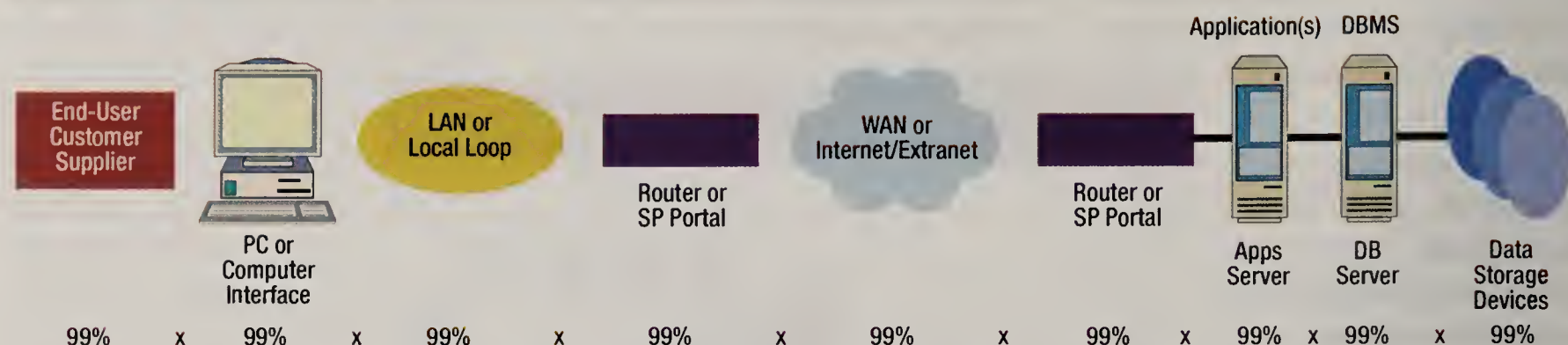
Every day, there is a new Web hosting firm coming online, and they are hosting the most vital thing in the IT inventory: the application.

— DAVID TAPPER, IDC

Nor are the hosting vendors they entrust experienced in supporting these kinds of solutions. What they have is floor space and the ability to aggregate Internet bandwidth—and that's a good start. But emerging companies that entrust their

because it spreads the costs of floor space, equipment and networks that would have been incurred anyway. Add At-Time-Of-Disaster services at the mirrored sites, and the customer has an alternate site solution that can scale to 100% capacity should

ASSESSING AVAILABILITY IN THE CORPORATE IT INFRASTRUCTURE



.99⁽⁹⁾ = 91.35% Availability or 8.65% of revenue potentially lost = Over 758 hours (nearly 32 days) of downtime

Source: Comdisco

Continuity hold-outs

Despite the many advances toward infinite availability, many companies have no business continuity plans for their Internet-based applications, according to the latest version of the Vulnerability Index, a bi-annual study of large computer users co-sponsored by Comdisco, BellSouth and Oracle. On a scale of 1-100, with 100 representing maximum vulnerability, the average Internet Vulnerability Index score for organizations participating in the study was an alarming 66.

In comparison, the average score for LANs was 55, while enterprise

of these mission-critical systems.

The cost of downtime varies from company to company. Contingency Planning and Research estimates it at \$6.5 million per hour at retail brokerage houses. For brokerages, downtime is an unmitigated disaster, but even for dot-coms, once you factor in the legal costs of lawsuits and the impact of reduced stock value, the downtime estimates only go up. Furthermore, the impact of downtime often exceeds hard dollars, going straight to corporate image. "It's about how quickly you can lose a customer's trust," says York. "It's hard to put a price tag on that."

whelmed by their daily tasks of keeping production systems up and running. Consider some of their challenges:

- The time-to-market demands of e-business are compressing the cycles for application projects, while backlogs are piling higher.
- Good technical people are harder than ever to find.
- Top management is focused on revenues and expects 100% business continuity.

"CIOs are piled knee-deep in projects and they probably can't deliver on all of them," says Tapper of IDC. "They rationalize that the chance of having a disaster is negligible."

That may be so, but publicly traded e-commerce companies who fail to protect themselves with business continuity and high availability are taking a myopic approach to a potentially fatal problem, warns Peter S. Cohan, president of Peter S. Cohan Associates, a consulting and venture capital firm based in Sudbury, MA. "It's not high enough on their list of priorities, and top management is not taking the issue seriously," he says. "Many sites are just trying to keep up with their competition, and it is going to take a disaster to wake them up."



[The impact of downtime] is about how quickly you can lose a customer's trust. It's hard to put a price tag on that.

— TONYA YORK, CHARLES SCHWAB & CO.

and application servers registered an index reading of 42. Overall, the study found that only 39% of companies had an effective business continuity program in place for all three

Overwhelmed CIOs

Why are some companies not deploying protection against catastrophic downtime? It may be that CIOs and other IT leaders are over-

The chance of having a disaster may be small, "but when it happens, the impact can be much larger than they realize," says Tapper. In fact, several high-profile companies have at one time probably felt that they were in a Hollywood disaster movie. After being down for 22 hours in June of 1999, online auctioneer eBay reported a revenue loss between \$3 million and \$5 million. Its stock dropped 26%. After being down for 24 hours in June 1996, AOL had to cough up \$3 million in customer rebates.

These, of course, were unplanned outages. Until recently, corporate infrastructures could at least accommodate planned outages (for maintenance or software upgrades). But with the world running on Internet time, things have changed.

When high availability demands 24 x 7 uptime on a global basis, there is no good time for shutting systems down. In April 1999, a software upgrade cost AT&T \$40 million in rebates. The way out of this dilemma is straightforward: Develop a solution based on a good business continuity plan. It may not seem like a lot to ask, but as the Vulnerability Index reveals, at many major companies, it simply isn't happening.

"Disasters may be infrequent, but interruptions are plentiful. In the Internet world, five minutes is like a week in traditional IT," says John Jackson, president of Comdisco Continuity Services.

There is no escaping the irony of dot-com companies falling prey to the ravages of Internet downtime. Yet many have, sometimes spectacularly so. But the "goriness" of those crashes may have helped the majority of these new firms to learn their lesson, suggests Tapper. "They have

all seen what happened to Amazon.com, and they don't want that happening to them," he says. "Now, whether they have the forethought or the know-how to build something that is really going to work for them is another question."



In the Internet world, five minutes is like a week in traditional IT.

— JOHN JACKSON, COMDISCO CONTINUITY SERVICES

Companies unwilling to spend money on continuity services might view the situation in a different light if they considered the risk to their revenues. These companies should ask themselves if it makes sense to spend 1% of their revenues to ensure the safety of the other 99%. When the question is phrased that way, it is hard to come up with "No" as an answer.

Domino effect

The advent of electronic supply chains has allowed companies such as Wal-Mart to manage their supplier relationships in such a way as to minimize inventories and save money. They then pass those savings along to customers in the form of lower prices. This trend will only grow as more companies, and more smaller ones, are brought into the e-commerce loop.

But this chain has serious implications for business continuity. If one supplier network goes down, it could drag others down with it, or at the least render them useless while recovery operations are affected. This domino effect could cause a chain reaction that would spread to companies like Federal Express and

beyond. While it may be too alarmist to suggest a global gridlock scenario, it is realistic to say a lot of money is lost every second that a major supplier network is down.

All of a sudden, when so much revenue is at risk, a minimal outlay

for improved availability looks like a very good investment.

Quest for end-to-end reliability

In the pursuit of infinite availability, the need for an end-to-end architecture cannot be overemphasized. Any architecture is only as strong as its weakest link. As a result, each component of the information flow must have a comparable and synchronized recovery time. If not, achieving a minimal recovery time or zero data loss recovery point may be prohibitively expensive.

This means that the entire data path must be completely reliable. Given the potential for failures on LANs, WANs, routers and portals, this is a monumental challenge, and not one that many service providers can overcome.

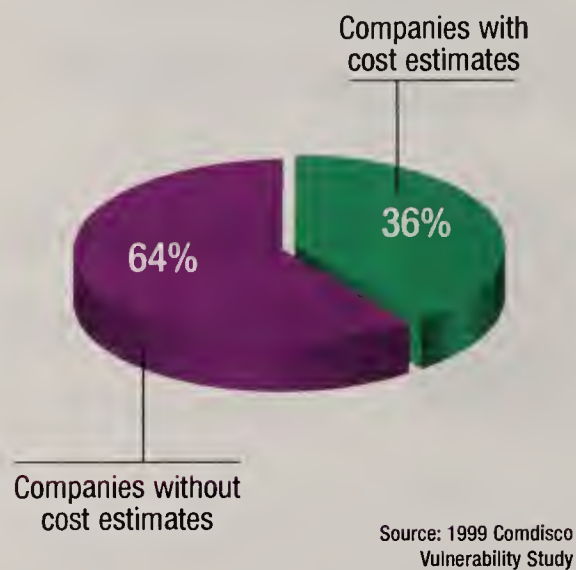
Even well-meaning companies that develop business continuity plans may fall short of their availability goals. For instance, some firms thought they were covered because they had database replication, says consultant Samuelson. "But they got buried with an onslaught of hits and because their architecture wasn't completely thought through, they went down."

Perhaps the reason these companies failed was because, although they spent a lot of money on tape backup, uninterruptible power supplies, backup power generators and duplicate hardware in their data centers, these investments only accounted for 80% of the complete solution they required. The other 20% included the hot recovery capabilities located at an offsite facility that could fail-over instantly if an outage occurred at the primary customer location.

Essentially, these "80% companies" were putting everything they had invested on continuity at risk because they were either unaware of the final

WHAT, US WORRY?

Most companies do not have an estimate of how much an outage would cost.



20% of the solution or unwilling to pay for it. But without that final 20%, the money they spent on the other 80% was wasted, because if the worst happened, they would be financially devastated. It's like having life insurance 10 months of the year.

Should they spend their money on this final 20%? "Absolutely," says Samuelson. "The key piece is the transactional management software handling the Web-based transactions that are load-balanced between your different Web servers. That piece has to be highly available, and you are going to have to do some hardware fail-over there."

Internet security firm pledges continuity to customers

In early 1997, there were few business-oriented Internet companies, and little need for these companies to have structured continuity plans. Digital certificate provider VeriSign, Inc. was one of the first.

VeriSign employs a business model that calls for Web sites, enterprises and e-commerce service providers to leverage its infrastructure so they can deploy digital certificates for their employees, customers and partners. With so much riding, the Mountain View, CA, company needed to demonstrate its reliability and availability to its customers.

In April 1997, VeriSign began looking at a number of companies that could provide these services, including Comdisco. The company chose Comdisco because "they were the most flexible in terms of addressing the unique aspects of VeriSign's business, that of being a mission-critical, Internet-based online services company," according to Susan Schroeder, technical project manager for VeriSign. Consequently, VeriSign became the first Internet company to do business continuity through Comdisco.

Later that year, VeriSign began working with Comdisco to design its availability scheme. Today, one of Comdisco's East Coast Technology Service Centers (TSCs) contains a scaled-down version of VeriSign's production architecture, including replicated database transactions, customer configuration files and all the software code necessary to operate

VeriSign production services.

From VeriSign's perspective, two factors complicate the availability operation. One is that the company continually tries to get better and faster in recovering services. "We contractually guarantee 24 hours, and a big piece of that is the requirement in terms of activating the most secure components of our architecture," says John Ferguson, director of production services (IT services the company runs on behalf of customers) for VeriSign. Those components include the public and private key pairs required for digital certificates.

The second complication is that every time VeriSign adds a new service to its infrastructure, it has to amend its availability operation accordingly. "So while we are struggling to stay on top of our primary IT infrastructure, the big challenge is in having the continuity plan keep pace with the level of changes we're making," he says.

Every online service VeriSign currently offers is replicated in one of Comdisco's East Coast TSCs. The unit is a shared facility, but is equipped with VeriSign's specific security requirements. VeriSign uses a second Comdisco TSC on the West Coast to replicate its own customer service capability. In the event of a disruption, VeriSign would relocate its customer service personnel to that center, so they could perform the services needed to support the company's customers.

The Comdisco solution

How can companies best protect themselves? The first step is to gauge the availability of your applications. IT managers need to be sure that they can carry out their company's business mission with the applications and technology on hand.

This is important because most companies have been adopting technology at breakneck speed (e.g., the Internet, handheld devices, new ERP apps). IT managers will need to perform a formal risk assessment or else solicit a small amount of the right information from each of the major lines of business. They should quickly ascertain:

- Required levels of availability
- Current capability
- Impacts of an outage

Once they have determined their capabilities, magnitude of exposure (if any) and their business requirements, the next step is to brainstorm an availability architecture. Comdisco suggests that IT managers identify the top three to five business processes and develop an architecture that provides the necessary Capacity, Access, Performance and Availability, given their company's cost constraints. These first two steps should be done as quickly as possible; in the Internet economy, "analysis paralysis" won't be tolerated.

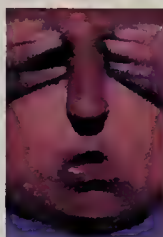
Comdisco offers a comprehensive suite of capabilities that provides true availability for today's companies. In combination, its private network, 49 global Technology Service Centers, software, professional services and service methodology provide an end-to-end solution for availability services. Those capabilities, coupled with Comdisco's experience in supporting nearly 400 disasters and more than

38,000 continuity tests, give it the expertise to keep its customers up and running at all times, no matter how bad the outage.

"What we bring to customers is a laser focus on availability, and the experience of nearly 400 recoveries," says Jackson. "When it comes to outages, we have seen everything,

as well as design and manage ongoing testing and maintenance programs. Each of these services can be provided on an enterprise-wide basis or targeted to the specific areas (data centers, networks, distributed systems or desktops) that require the most attention.

Comdisco also offers a full range



The major trend is that customers are demanding advanced recovery solutions that, in many cases, fail-over in the event of a production outage.

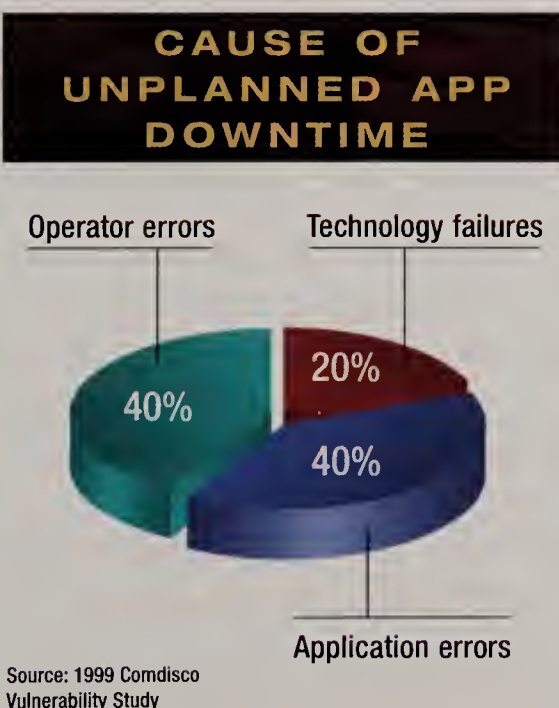
so when you combine our experience with the internal knowledge of our customers, the result is an unbeatable team."

The professional services arm of the company consists of more than 250 delivery professionals worldwide who quickly assess risks,

of IT services. One of these services comes in the form of Technology Service Centers, containing everything from mainframe computers to distributed systems and servers, which are available to customers whenever they require it, as well as the network to connect it all together.

However, the major trend is that customers are demanding advanced recovery solutions that in many cases fail-over in the event of a production outage. More and more customers can't afford the time-consuming exercise of backing up and restoring systems via tape. For those customers, Comdisco will implement a solution that mirrors, replicates or balances the loads between two locations.

The business function availability services component of Comdisco Continuity Services provides the end-to-end capabilities that customers demand when their business area infrastructures are crippled—as in the case of the World Trade Center bombing. Through this service, Comdisco provides a customer's



define architectures, develop crisis management procedures and actually manage customer continuity programs. These professionals can implement an end-to-end solution,

At Dow Chemical, continuity is part of the customer formula

AS CIO OF THE DOW CHEMICAL CO., in Midland, MI, Dave Kepler is responsible for a sprawling global IT infrastructure that requires constant monitoring and management. As a customer of Comdisco Continuity Services, Kepler has the peace of mind that comes from working with a trusted partner that is always looking out—and ahead—for potential business continuity problems. In this interview, he discusses the role Comdisco plays at Dow, and the value it represents.

Q: Describe your overall corporate IT infrastructure and the responsibilities Comdisco has in keeping it up and running.

Kepler: Dow has a common global infrastructure around the world, so it's managed in a centralized group. We also have a large SAP complex. Comdisco is responsible for working with us on disaster planning, but also risk management and continuity planning as they relate to our key assets. They also work with us on end-to-end assessments of our work processes. Our key assets include our data centers, our networks and our call centers.

Q: How has the nature of the services Comdisco provides evolved?

Kepler: When our relationship started eight years ago, it was more focused on disaster recovery and backup. Since then, it's evolved into business interruption services, continuity planning and consulting, with a focus on identifying key areas for improvement, risk analysis and strategy development.

Q: How important have the Internet and extranets become to Dow? How has this altered your view of the need for infinite availability?

Kepler: When you start to go out to the Internet and provide direct access to your customers, you really have to think through the continuity issues because now you are much more directly linked to the customer. So the way you work on those strategies has to be much more reliable.

Q: Many large companies are inextricably tied into the networks of suppliers and other outside business partners. What threat does this present to you in terms of

potential downtime? How does Comdisco protect you from this threat?

Kepler: When you work with multiple suppliers as we do, you have to look across all those components. It's not just about how well you provide the services internally, it's about the relationships you have with those suppliers. Comdisco works with us on a consulting basis to evaluate factors that drive our systems performance, and makes sure that what we do inside of Dow and what we do with our partners is consistent with the performance we expect.

Q: What is the CIO's mindset when they evaluate the pros and cons of business continuity?

Kepler: The reality is that as things start to scale up and

people start to rely on the Internet for their day-to-day business—whether it's personal or business-to-business—they find that even though things need to be fast in this kind of environment, they need to be done correctly. So we've worked on making sure that the issues around continuity planning are built into the projects that we are doing.

Q: How has Comdisco saved you money and justified the cost of its services?

Kepler: By giving us a holistic look at business continuity services, so we can make a cost-effective decision based on what our business needs are, and the

risks we are exposed to in the business environment. They work side by side with us in understanding our needs and mapping their capabilities to our business requirements. They listen well to the customer, yet they also challenge you appropriately in the areas where they feel you need to improve.

Q: What advice do you have for other large companies who are contemplating the need for services such as those offered by Comdisco?

Kepler: You can do this yourself, or you can have somebody else support you. Having somebody from the outside like Comdisco work on this with you provides a much more objective view of what you are trying to get accomplished. In the final analysis, that will give you better results.



Dave Kepler

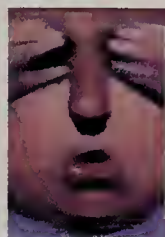
employees with Technology Service Centers configured as call centers, with workstations and LANs, that can be connected to their IT organization. In order to tout availability, a company must architect a solution that includes back-office, network and end-user functionality. Comdisco also looks at innovative methods for protecting, backing up and replicating the data located on workstations, file servers and mail servers. Many of these solutions are capable of leveraging the Internet to decrease the time and effort required to manage these activities.

Comdisco also offers a line of business continuity planning software tools, including a package designed to quickly perform business impact analyses. Other packages guide customers through the development and execution of recovery plans for both business and IT organizations. This software enables customers to quickly gather business requirements and apply them (via the Internet) to keep their plans current.

The Comdisco infrastructure includes one of the largest private networks in the world. Called CCSNET™, the network is designed to maintain high availability and survivability while supporting a mixture of high-capacity, high-speed applications. This network links customers with Comdisco's Technology Service Centers around the globe.

Comdisco also offers Web hosting services for e-business companies to deliver continuous availability solutions. These services are based on the company's end-to-end high availability architecture and are backed by Comdisco's extensive IT infrastructure and expertise. The company also offers a turnkey solution

that immediately delivers additional capacity to meet planned or dynamic peaks in traffic on a client's e-commerce site. All of these solutions—advanced recovery, data protection and web hosting—required Com-



If you have to take on any kind of Web-based applications, [or] do any e-commerce, you're going to need security, recovery and high availability.

— DAVID TAPPER, IDC

disco to understand more about the production environment of customers and prospects. Comdisco will continue to leverage its experience, methodology and human resources to help companies assess the viability of new technologies such as Storage Area Networks (SANs), enterprise storage backup and Dense Wave Division Multiplexing. These new technologies will further decrease the gap between production and recovery. . . leading towards infinite availability.

Wealth of experience

According to IDC's Tapper, Comdisco's wealth of continuity experience gives it a big advantage over new companies offering Web hosting services. "These other companies are one or two years old," he says. "They're just trying to build their businesses. Comdisco can step in and say, 'We've been doing recovery for 20 years.'"

"If you have to take on any kind of Web-based applications, if you have to do any e-commerce, you're going to need security, recovery and high availability, and those are the most complex sets of all IT skills,"

he says. These are the skills offered by Comdisco.

York agrees that Comdisco is well-positioned to offer Web hosting services. "First of all, they have experience in all kinds of technol-

ogy," she says. "Then specifically, they have their networking experience, as well as their expertise helping companies recover from business interruptions."

In the final analysis, one must weigh the importance of business continuity solutions. "How do you measure the fact that you were down and it was on CNN?" asks York. "You can't measure the people who walk away."

At Charles Schwab, one way or another, high-availability recovery is worth the investment. "You can play the odds," says York. "Somehow, we use our contract with Comdisco at least once a year."

Finally, there is one more good reason for hiring an organization such as Comdisco to provide high-availability services: "You have somebody in there with you who has just as much vested interest in your success as you do," says York. "To me, that's a huge benefit." •

Bruce Hoard has reported on high technology and its implications for more than 20 years. He is based in Salem, N.H. and can be reached at 603 894-1326 or via e-mail at bhoard@mediaone.net

[I keep you up nights]

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to whom you can delegate the planning, care and management of the infrastructure, or outsource it. And lastly, if the company promoted you to do both jobs, get your résumé ready.

WHAT DOES I.T. COST?

Q: Has the qualification set for a CIO changed with the shift in business architecture? I run a \$40 million front-office solutions group for a Fortune 500 company serving the financial services and telecom industries. Our strategy group continually runs into organizations with a strong business need to reshape their fundamental processes around customers whose CIOs have not prepared the infrastructure. Rather than an emphasis on knowledge management and enterprise processes, I see far too many CIOs stressing transaction-processing costs and effi-

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ciency. As I think about my next move, the opportunity to take on a CIO role is appealing; however, I am concerned about the emphasis I see on cost rather than on value. How does one spot the companies that understand the strategic value of IT and truly allow a CIO to enable the business?

A: You have articulated the essential question of old versus new thinking, of seeing IT as a cost center rather than as a strategic tool or business enabler for competitive advantage—except that a sound cost structure must come first. In fact, being a low-cost provider is still a valid strategy in a commodity-oriented product or service business. And you can't build advanced business processes, KM systems or e-business platforms if the infrastructure is weak and not cost optimized. That's why you have a great CTO working for you—to stress over those things while you do the heavy thinking.

As far as spotting the right companies that get it, find out to whom the CIO reports (it should not be the CFO) and whether the CIO sits on the executive management committee. Ask to see the company's IT strategic plan and insist on talking to the CEO, the COO, the CFO and the peer department heads and ask them all the hard questions that should tell you what you need to know. Anything less is a gamble.

E-MAIL IS BEST

Q: When starting a job search, is there a best method for mak-

ing initial contact with executive recruiters? Do they prefer phone, mail, e-mail or receiving a response via their website?

A: My preferred choice, and the choice of many of us in large organizations, is via a concise e-mail text cover letter and a résumé attachment. This contact method gives me the option of reading the letter to determine if this is an appropriate candidate for the opportunities in my own practice area. If it is appropriate, I will then open and review the résumé. If not appropriate for my practice, I can usually determine from a well-written cover letter whom of my colleagues should receive a copy of the inquiry.

In either case, it is extremely convenient for me to review, possibly refer onward and have the résumé captured into our database for future access by our research department as new search assignments come in. By the way, this method also gives me the option of printing inquiries or downloading my e-mail inquiries for offline review on my train commute or on an airplane trip. Website access should accomplish the same result, but your message will be reviewed first by a researcher rather than by a search consultant. Snail mail is OK but not nearly as good as e-mail since it has to be photocopied or faxed in order to be forwarded to colleagues, or it must be scanned to be captured into a database. My last choice, regardless of what the books and outplacers say, is phone contact.

SUCCESSION PLANNING

Q: I am currently a CIO in municipal government. I plan to leave for my next opportunity within six months to a year. For the good of the organization, I'd like to raise the issue of succession planning with my CEO. However, I am concerned how this issue might be received. Is there a way to broach the topic that minimizes the risk? It seems that the lowest risk to me personally is to wait until my next position is assured, but then of course it's too late.

A: It would be very helpful to know the nature and the depth of your professional and personal relationships with your boss. I will, however, assume from the tone of your question that the relationship is not strong enough to accommodate an advanced warning of your intention to move on. Your obvious plan of action then is to say nothing of your leaving and craft a succession plan as a normal and important ongoing activity that should be done by all good chief information officers as part of an annual plan or part of a contingency plan (did you neglect to include human contingencies?).

WHILE I WAS AWAY...

Q: I am 45 years old and have had a significant career with investment banking and financial services, IT corporate man-

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agement and consulting firms. I have a solid background in technology and an MBA in finance. I'm articulate and possess serious leadership skills and experience. However, I took time off to pursue my own business unrelated to IT, sold the business at a profit and am back now to pursue a career as a CIO or COO. I missed Y2K and the beginning of the internet world! Is my five-year hiatus that much of a minus? Résumés I have sent on the internet have not been answered and headhunters have been mildly interested thus far. Please provide some words of wisdom to facilitate my search in earnest.

A: In this golden age of entrepreneurial activity, your question has become a frequently asked one. Yes, I think the time off is a drag against your job search since you not only missed the growth of the internet but also much of the state-of-the-art in networking, distributed computing, data warehousing, ERP systems and customer relationship management systems. Also

Using the internet in your job search should be only one facet of your search resources. You will do much better through personal networking and traditional executive search firms.

remember that recruiters and potential employers perceive a palpable risk that you will jump ship once again in the future for some other entrepreneurial opportunity.

On the other hand, you say that you have a very strong and well-established track record of IT management—plus solid expertise in the very hot brokerage/online-banking industry. I suggest that you go on the market as a CIO candidate for a small financial services firm and gauge the reception you receive, or at the director level in a larger environment to regain your career momentum and then continue toward the CIO, CTO or COO level.

As for using the internet in your job search, it should be only one facet of your search resources, especially at this level. You will do much better through personal networking and traditional executive search firms that can get you and your situation past the noise of online recruiting. By the way, it would be wonderful if self-confidence alone could get you there—keep it up but take care not to overdo it.

FIRST-YEAR CONCERNS

Q: I recently accepted a position with a very large \$14 billion financial institution. This is a very different culture from the entrepreneurial companies I've worked for in the past 20 years.

A successful transition is important for me to establish continuity in my career—following being laid off by new management in my prior two positions. What specific books, publications and other resources that deal with the first year in an organization—successful cultural assimilation, becoming recognized and known (smaller cog in a larger organization) and so on—do you suggest?

A: I must admit that I am not familiar with any books or publications that deal specifically with the short-term assimilation and cultural challenges that you face. (Perhaps our readers can make some suggestions?) My strong recommendation for integrating into your new environment, regardless of the particular nature of the new space versus the old, is to acquire a mentor at your new company. I have previously written in this column about having a mentor; it is your best bet for learning the ropes, gaining a sense of the politics and navigating the rules of the road at your new place of employment. And you don't have to stay within IT to find a mentor! Just make sure that you chose someone who is well positioned in the company and preferably someone who has a stake in your mutual success.

STRATEGIC PLANNING

Q: How can I find a conference on developing the ability to create a strategic IT plan?

A: Good news! There are a very large number of resources available here, since IT strategic planning is such a critical and pervasive topic. Most of the IT industry associations (for instance, the Society for Information Management, Association for Computing Machinery, Data Processing Management Association) have seminars, working groups and white papers available. The professional exchanges and training organizations, both for-profit and not-for-profit, such as the Conference Board and the American Management Association, offer relevant seminars and publications. And the IT industry advisory services (Meta Group and GartnerGroup, for example) and the management consulting firms (Big 5 and others) all have well-established methodologies and practice expertise in IT strategy planning. **CIO**

Mark Polansky is a managing director and member of the advanced technology practice in the New York City office of Korn/Ferry International. He also is the chairman of the Greater New York Chapter of the Society for Information Management. The web-based Executive Career Counselor column is edited by Web Research Editor Kathleen Kotwica. She can be reached at kkotwica@cio.com.



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What will be will (continue to)
be in the next century

BY TOM DAVENPORT

BY NOW WE ARE all a bit tired of millennial predictions about the future. So far, the 21st century feels remarkably like the 20th, beginning with the rather widespread survival of computers through the Y2K changeover. I've got a sneaking suspicion that it will continue to do so. In fact, I've decided to devote this entire column to bold predictions about what won't change.

Hierarchy, for starters, will always be with us. Despite all the trees that have died for the paper on which "the decline of hierarchy" was printed, it's still there, even in the hottest internet startups. It may be harder today for outsiders to figure out who's really in charge, but rest assured, somebody is. I loved the comment by E.O. Wilson, the Harvard biologist who has studied social life in ants, humans and lots of species in between. A *Wall Street Journal* writer asked him, "Is it silly to think we can eliminate reporting and power structures within companies?" Wilson's answer: "Oh, yes." He went on to say that a tendency toward hierarchy and concern about recognition are unlikely to change. I'll side with E.O. on this one.

Time is another overhyped dimension of business life. The business press would have it that if you're not living and work-



ing on "internet time," you'll be left behind and can never catch up. Sure, the pace of business life is faster these days; five-year plans probably won't make much of a comeback. But it still takes plenty of time to create a great company or organization. Building a revenue base, establishing customer and employee loyalty, renewing the product and service development stream, and designing effective process and information flows are all still necessary for long-term success, and they all still take years to master. We are already seeing many "new economy" companies seeking to develop some of these "old economy" virtues.

And don't worry. There will still be an important place for humans in the worlds of business and work. If for nothing else, we'll be needed to make new technologies function and fit together. Perhaps the predictions about the 21st century that were most wrong were those suggesting that by 2000



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we'd have little to do because of widespread automation. Instead of the 20- or 30-hour workweeks that many futurists predicted, white-collar workers are clocking in more hours than ever before, and unemployment is at historically low levels. Indeed, the continuing challenge of the 21st century will be balancing work and life. We'll probably continue to find that work is more like life (with day care, cappuccino bars, nap rooms and pets in the office) as life becomes more like work.

So real face-to-face contact between humans will continue to take place. We're a social species, and electron-based socialization doesn't quite cut it. Yes, I've been in on many an audio,

The pace of business life is fast these days, but it still takes time to create a great company.

video and web conference, but thankfully some people still want to see me in person. Even if global warming limits our carbon dioxide production, I'll bet we'll still be riding bikes to our (perhaps more conveniently located) offices.

Powerful Experiences

Other experiences, including shopping, will still be popular in the coming century. We'll continue to want to get out, just as we still go to movies in the age of the VCR. In fact, I believe that physical business experiences will be greatly enhanced over the next few decades. It will be easier to buy books and records online, so we'll go only to those physical stores that offer good food and performances by artists. It won't be appealing to attend a conference to hear a boring talking head give a PowerPoint presentation because it can be easily downloaded and played at will. Instead you'll attend a conference to play games, hear and tell powerful stories, and participate in experiences that truly reshape your consciousness. Experience design will have to become a core capability of many companies.

Technology will continue to be hard to use. Computer scientists have been arguing for decades that the increased processing power will make computers easier to use, but it hasn't happened much yet. As a corollary to this particular constant, don't tell Johnny to throw away his "Mavis Beacon Teaches Typing" program yet; I predict that keyboards will be around for a while. If nothing else, we'll use them on airplanes or when composing intimate e-mails from our cubicles—situations in which you won't want to chat with your computer.

In addition, people will continue to be disappointed with the IT function in companies. If technology change continues, and marketers continue to promise that the technology will be easier to use than it actually is, users of technology will continue to wonder why those guys in IS can't get it right. In

fact, I'm sorry to say that this situation may even worsen, as a higher percentage of the economy is composed of organizations providing IT products and services. I've always found that the toughest place to be in the IT function is in an IT company, because everybody there thinks they can do your job better than you can. It may be time to consider the IT function as a transitory destination, rather than a permanent one, in your career.

I will go out on a limb and predict that the internet and e-commerce are here to stay. It seems clear now that we will continue to have intermediaries of all sorts in the future. Many

internet startups, particularly in the B-to-B sector, have been intermediaries, and they are thriving. Even when companies decide that they want to take back control of such functions (as GM, Ford and Chrysler are doing with their online purchasing marketplaces), they'll spin them out as separate companies. There is a perennial appeal to dealing with organizations that can represent multiple buyers or sellers in a seemingly impartial manner. Some intermediaries will certainly wither away (I personally am pulling for the demise of residential real estate brokers), but just as many others will arise and prosper.

Similarly, some other much-hyped aspects of e-commerce won't really come to pass. After the initial flurry of the internet land grab, physical products will return to being worth something. We can't eat information; in fact, there is only so much of it that we can read, hear, watch or otherwise consume.

Business-to-business e-commerce networks will continue to prosper, but dynamic pricing and spot markets will not take the place of long-term business relationships. Ensuring supply, high quality and integrated interorganizational processes will be worth more than saving a few cents per transaction. Many of these networks will offer transactions on the margin to meet unanticipated demand or to sell surplus.

The internet will make it easier for "e-lancers" to be free agents and work with multiple companies. But hardly everyone will want to be one. Job security will still matter to many workers. Further, someone will be needed to provide continuity and manage e-lancers. If it takes time to build a business, it also takes some employee tenure.

We live in exciting times, and lots of things are changing. However, we need to know what we can count on in a world of variation and flux. **CIO**

Thomas H. Davenport is a professor at Boston University School of Management, director of the Andersen Consulting Institute for Strategic Change and in residence at Babson College. He welcomes reader comments at davenport@cio.com.





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Total Leadership

The Master Planner

There's no doubt that you need to plan. The trick is doing it well—and at the right time.

BY CHRISTOPHER HOENIG

DWIGHT EISENHOWER may have been the ultimate master planner of the last century. He orchestrated the largest movement of troops and material in history—the D-day invasion—across the English Channel against heavily fortified defenses and succeeded. So what did he have to say about good planning? “Before a battle, planning is everything. But during a battle, planning is useless.”

In that phrase, he captured the central paradox of strategic planning: On the one hand, it is absolutely necessary to plan, anticipate and prepare for what might be down the road. On the other hand, plans and planning processes can get in the way when you're in the midst of execution or battle. Given the complexity and rapid rate of change in the technology arena, many argue that planning today is impossible. According to this view, you're better off just acting and adapting—Fire. Ready. Aim.

To Plan or Not to Plan—That Is *Not* the Question

In my experience, this is a false debate. If you're trapped in it, you'll never get anywhere. The issue is not whether to do strategic planning. Without it, you're flying blind. The real issues



are (1) how much planning to do, (2) how to do it well and (3) when to do it. Leadership is required to cut through the unproductive debates and focus on doing the right amount of planning in the right way. Then, stop and concentrate on execution and learning, which feed back into the next cycle of planning.

At one organization I worked with, we just couldn't seem to get strategic planning off the ground. Plans were made by a few staff members and were largely ignored, and executives simply wouldn't make the time. We needed it desperately because the combination of a fast-moving outside environment, emerging competition and a management operation in some disarray was a dangerous one. The problem was twofold. First, the culture was action oriented, so people instinctively rejected the idea of spending time planning rather than acting. Second, the management team had recently been burned.

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Anatomy of a Planning Disaster—What Not to Do

Several years before I arrived, the company had gone through a classic planning disaster. It kicked off with a huge visioning exercise, complete with lots of expensive consultants. This culminated in a multimillion-dollar systems development effort. The project took three long years to fail—but not before enriching hundreds of outside experts. It failed because there was too much planning, done the wrong way, with no relationship to execution.

The sages have always said that good fortune is when preparedness meets opportunity.

Specifically, the previous effort at strategic planning had made all the prime mistakes that I've seen made:

- **No measurable goals.** This company set out a general vision and specific tasks but had no quantifiable short- and medium-term goals that leaders could be accountable for.

- **Unchanged incentives.** The company put all its good thinking in a document, gave the work to someone else and failed to realign its incentives. So, in the heat of day-to-day business, everyone went back to doing what they had always done.

- **Faulty estimation.** The company overestimated what could be done in the long term and underestimated what was necessary in the short term to work toward larger goals.

- **Monolithic effort.** It failed to break the problem down into modular, incremental chunks that could be tackled individually. This created the “grand design” effect—a large, unwieldy effort that slowly but surely grinds to a halt.

- **No milestones.** The company didn't link the plan to resource allocations or results-oriented milestones. These make it possible to set priorities and make course corrections.

- **Inflexibility.** It was unable to look flexibly at the future, to develop alternative paths, contingent scenarios or experiment with the sensitivities of its actions on future outcomes.

- **Misplaced focus.** The company ignored the path. It didn't take the trouble to “backward chain” until there was a real understanding of just what route was required to get to its goal.

- **Expense perspective.** It looked at the cost of change as an expense, not an investment. As a result, it lacked the incentive to identify and manage risks or take the steps needed to capture returns.

Hitting the Sweet Spot

So how did the team get a new strategic planning approach off the ground? Our first step was to completely forget about planning. We just focused on problems and opportunities that

were staring us in the face. The sages have always said that good fortune is when preparedness meets opportunity. Well, we figured opportunities might be able to inspire us to higher levels of preparedness and vision for the future.

So we tackled one problem and opportunity after another—cutting cycle time, improving productivity and upgrading infrastructure, for starters. As we went along, we began what I called “mountaintop” sessions—half-day executive meetings held monthly in which we stepped above the fray to look

around us, look down on the troops, look over at the enemy and look ahead to the future. We'd then go back onto the battlefield with a different perspective—a collective one—on the daily skirmishes each of us was fighting.

The first of these sessions was little more than a chance to air long-standing complaints and issues.

But by the second, we were all beginning to look toward the horizon. People started meeting offline to begin initiatives that had real strategic importance. By the third and fourth sessions, we had built up enough momentum to start doing more formal planning—which started as listing major initiatives, creating an investment portfolio and committing to tracking progress and results. We identified process owners and allocated staff to support executive efforts. Soon we had identified key issues as strategic points of emphasis and were working to look even further ahead.

Before everyone knew it, we were in the rhythm of a solid strategic planning process. But it wasn't one that was linked to an annual cycle or that involved formal documents. Instead, it was keyed to the style, history, culture and personalities of the management team—which emphasized execution. It quickly became central to how we did business.

For us, the most significant impact turned out to be the element of self-discovery. We owned the process of determining our future because we were creating it, not simply completing steps in an orderly, preordained process. Planning had emerged out of action, not the other way around. In other words, we made the road by walking.

If you're struggling with how to get your team engaged in a planning process, I can't think of any better way to get moving toward wherever you want to go. **CIO**

Send your planning tales or thoughts about our ongoing Total Leadership column to leadership@cio.com. Christopher Hoenig has been an entrepreneur, government executive (director for information management and technology issues at the GAO) and consultant, and is author of a forthcoming book on problem-solving and leadership techniques. He is now chairman and CEO of Exolve in Washington, D.C., focusing on next-generation web-based problem solving.

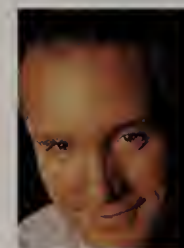


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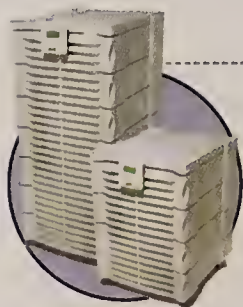
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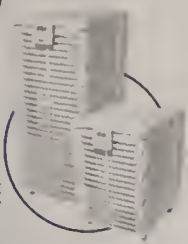


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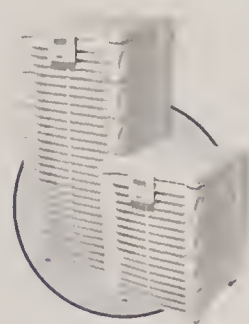
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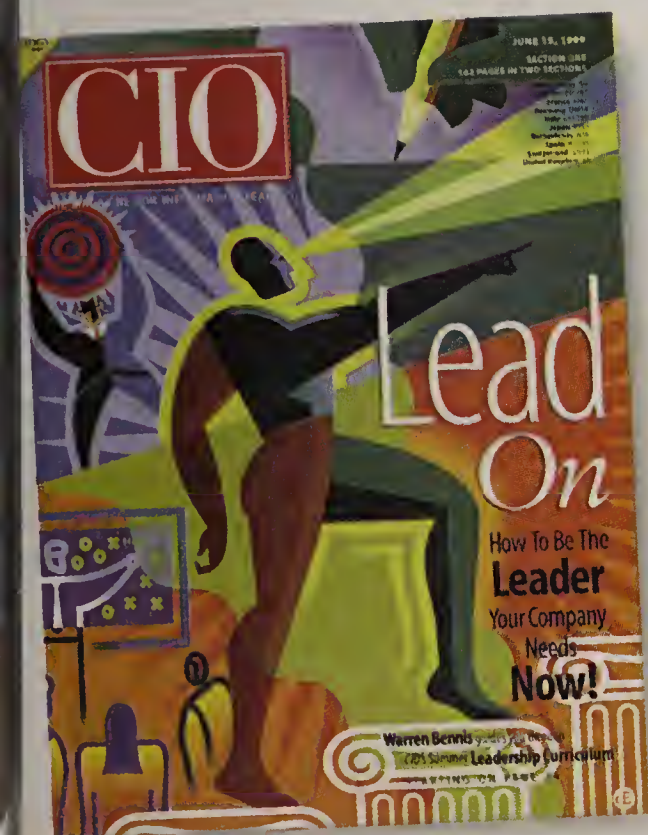
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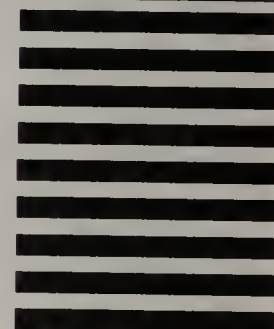
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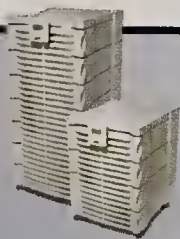


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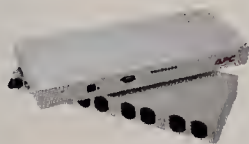
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As ASPs size up the Fortune 500, the three hottest letters in technology are getting ready for the big time.

But can CIOs rally to tame the beast?

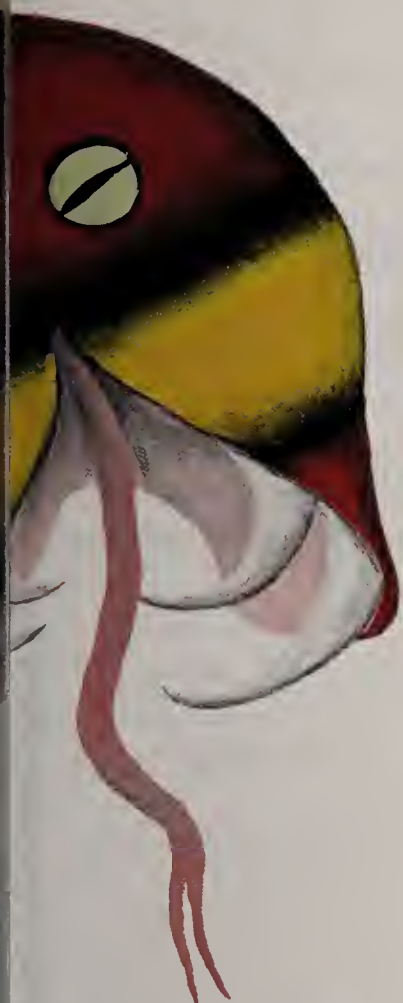
BY CHRISTOPHER KOCH

Read this story to learn

- ▶ How ASPs offer clients a temptingly easy cure for missing skills and capabilities
- ▶ Why ASPs sell directly to nontechnology executives and don't see IS as their friend
- ▶ What CIOs should do before the ASPs come knocking on the door

MONSTER IN A BOX?

Part 1 of a Two-Part Package



The leash on technology spending and control is slipping from the CIO's hand. The factors that have ensured the CIO's participation in technology buying decisions will soon go away. All that will be left for the CIO is accountability if something goes wrong.

The culprit is a seemingly harmless fad called ASP (application service provider).

Broadly defined, the concept is the delivery of a software application over a network (such as the internet) using "pay as you go" pricing. Primarily targeted at small or midsize companies that cannot afford their own IT departments or computing infrastructures, the ASP offering is compelling.

aspindustry.org), which, in its one-year life span, has already ballooned from 25 to more than 300 vendor members.

So far, the Fortune 500 has mostly resisted the entreaties of this hot market (expected to reach \$7.7 billion worldwide by 2004, according to IDC, a CIO sister company). But the ASP reach into small and mid-market companies is establishing a solid sales and referral foundation that will eventually spark an irrevocable change in the ways that all companies—regardless of size—buy technology.

Here's why. The ASP sales pitch removes the two primary barriers that have kept businesspeople from buying technology on their own. First to go is technology complexity. Buying software has always meant having to buy at once all the technology necessary to support it—networks, hardware, support soft-

"We want a progressive IT manager who understands that his or her role is managing the relationships with technology providers. If the CIO is protecting a [technology] empire, then he is our enemy."

—Christopher Terry, president and COO, HostLogic

You get a fully functioning, big-time application—such as enterprise resource planning software—and access it through the internet or a private network without having to pay for the installation, the hardware or the software. Just pay a monthly fee that amortizes the ASP's costs of installing and maintaining the application over time—as well as a healthy little profit margin.

The ASP model of leasing applications (contracts generally run between one and three years) is having the same impact on small and midsize companies that the car leasing market is having on income-challenged car buyers—it lets them sign up for more powerful, sophisticated applications than they ever could have dreamed of owning outright. Of course, the same kinds of downsides apply: no equity, very little control over the applications and some potentially harsh consequences for opting out before the contract expires. Yet all of that bad stuff is lost among the relentless hype and utopianism that surround what even ASPs' harshest critics acknowledge is a nice concept.

"ASPs are doing for applications what the internet did for data. They are making them universally available, affordable and easier to deploy," says Traver Gruen-Kennedy, chairman of the Wakefield, Mass.-based ASP Industry Consortium (*www.*

ware. ASPs remove that complexity from the equation—theoretically, at least—by providing all the supporting technology themselves. Businesspeople buy a business service—customer service, human resources and benefits, logistics—rather than a software application and all that goes with it.

The second banished fear factor is risk. Pay-as-you-go pricing takes the economic burden of buying software (upwards of \$100 million for a big ERP system for a big company) and transfers much of it to the ASP. There are no big consulting fees or hardware purchases up front, just a monthly fee. The sheer terror of sinking millions into a software application with no guarantees of success made businesspeople think twice before buying without at least getting IS input first. With an ASP service, they can go directly to the CFO with a contract stating the monthly fee—a much less terrifying number.

ASP vendors make no bones about their target audience. "We don't sell to the CIO, we sell to the businessperson," says Christopher Terry, president and COO of HostLogic, a startup ASP in Boca Raton, Fla. "We don't see IS as our friend. We want a progressive manager who understands that his or her role is managing the relationships with technology providers. If the CIO is protecting a [technology] empire, then he is our enemy."

Another vendor says that CIOs don't enter the picture until the business has already narrowed its options. "We interact with CIOs on security, scalability and adequate service levels.

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But we usually don't talk to them until we're into the deal," says Graham Lubie, executive vice president of Celarix, a Boston-based ASP specializing in logistics. "Once the end users find there is value, then they bring in IT to make sure we're not just another dotcom startup."

M

ost ASPs have an advantage in the small and midsize companies they target now because they have a skeletal IS department if they have one at all, and they may not even have a CIO. But big-company CIOs are at risk of being left out in the cold when the concept moves upmarket because they don't have the resources to offer alternatives to ASP products. The talent pool for qualified IS people—especially in hot areas like electronic commerce—is so tight that CIOs face a difficult choice: bring in outsiders like ASPs (with their attendant risks) or hold up the business while searching (often in vain) for qualified staff to do the needed work.

The corporate urge to put business services on the internet has turned into a stampede. Stan Lepeak, a research analyst for Meta Group in Stamford, Conn., remembers getting a call from a well-respected Fortune 500 pharmaceutical company that wanted to develop an e-commerce site from scratch in days and weeks—not months. "They wanted a shortlist of ASP vendors from me in a week, and they wanted to have the site up and running in six to eight weeks," he recalls. "They just wanted to focus on marketing and branding and

didn't care about the applications. We needed to tell them there wasn't a vendor that could cover all their [technology] needs."

But soon there will be. ASPs are going to add to the pressure Fortune 500 CIOs already feel to become closer allies with the business—or risk losing their jobs. Indeed, if CIOs wait until the ASP market really hits the Fortune 500 before they get closer to the business and begin acting as a trusted adviser—rather than as an arm's-length technology supplier—it will already be too late. Many CIOs say the ASP phenomenon is just the latest bit of evidence supporting the need to transform themselves from geeks into business thinkers and solution providers. "It is my responsibility to be a consultant to my business partners about solving their problems and not just be the technology geek," says Ken Harris, senior vice president and CIO of The Gap in San Francisco and a CIO editorial adviser. "ASPs don't add anything new to that issue."

Like most Fortune 500 CIOs, Harris has not yet bought into the ASP market, nor is he convinced that ASPs are ready for the heavy transactional demands and sheer complexity of a big company. But he is paying attention. "You have to consider the possibility of ASPs," he says. "You have to consider them in a whole bunch of emerging areas, like e-procurement, and in some more traditional areas, like general ledger or financial processing."

If CIOs don't take an active role in consulting to the business on ASPs, they, not the businesspeople, will suffer the consequences. "If the CIO hasn't done a good job educating businesspeople about what ASPs are really offering, the problems will come home to roost with the CIO," says Lepeak. "There is such a shortage of IS talent right now that ASPs will get business regardless of whether they can live up to their promises."

"It is my responsibility to be a consultant to my business partners about solving their problems and not just be the technology geek. ASPs don't add anything new to that issue."

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“If the CIO hasn’t done a good job educating businesspeople about what ASPs are really offering, the problems will come home to roost with the CIO. There is such a shortage of IS talent right now that ASPs will get business regardless of whether they can live up to their promises.”

—Stan Lepeak, research analyst, Meta Group

There are plenty of promises being made. Startup ASPs are offering turnkey solutions for complex ERP software without having a single “live” customer. Many are getting in the game by linking various specialty providers together in complex ASP supply chains. One partner may provide data storage, for example, while another offers web hosting services, and a third provides the application. Startup ASPs are inking complex contracts with each of these various providers for service and then packaging it all under a single umbrella. While this is probably the business model that all ASPs will have to adopt if they wish to be able to scale their services to meet the needs of multiple Fortune 500 customers, the linkages will be fragile until the ASP gets a few deals under its belt and irons out the inevitable service kinks among its various providers.

Meanwhile, some young ASPs, starved for those critical customer referrals, are giving away their services just to get in the game. Host Logic’s first customer, for example, was Florida Atlantic University, which will offer SAP’s R/3 ERP application to its accounting and business students through an internet link provided by HostLogic. The donation of services from HostLogic and SAP are acts to be admired, but for Fortune 500 companies such profitless deals offer little comfort when considering handing over mission-critical services to a new vendor.

With venture capital money burning holes in the pockets of hyperaggressive investors, new ASPs are springing up overnight to meet the need for leased applications. But with so many new entrants into a complex, unproved market, the repo man is lurking behind every corner. The shakeout among ASP players will be swift and brutal, predicts GartnerGroup. Of the current lineup of 300 or so ASPs, more than 60 percent will disappear before the end of 2001, due to poor service or market consolidation. Indeed, the market is rife with speculation that many ASPs are purposely signing up low or no-profit customers simply to gain market share and look

attractive to potential buyout companies—which Meta Group believes will be the major outsourcers like IBM, Computer Sciences Corp. and Electronic Data Services.

But perhaps the most troubling aspect of the ASP market for big companies is that many ASPs are building their profit margins by offering commodity versions of popular software. By severely limiting the customization of complex applications like ERP, ASPs can install the software more quickly and serve many different customers from the same set of application servers, thereby reducing their cost. That kind of model works fine for small and midsize companies, where legacy applications are few and small staffs can adapt themselves more readily to the business processes built into the software. But for big companies with complex business processes and big portfolios of legacy applications that need to exchange data with the ASP application, the need for customization is a given.

“The data [from the ASP application] has to get to your legacy systems and get converted,” says The Gap’s Harris. “I don’t know how you do that without [customization]. If ASPs are being presented as turnkey solutions that don’t require IS involvement, then the market won’t have much of a future.”

For big companies that have their own IS infrastructures and staffs, ASPs will play a much different role than they do for small and mid-market companies. Big companies need ASPs to fill



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Especially on the security front, IS may find itself the technical terminator—busting up ASP deals when the vendor can't provide adequate security for sensitive data that has never before left the safe confines of the company network.



small, specialized gaps in their application portfolios quickly. Cost cutting is not the big lure here—the decidedly mixed results of traditional Fortune 500 outsourcing deals have proved that farming things out doesn't always lead to lower costs. “This is not a total-cost-of-ownership sale,” acknowledges HostLogic's Terry. “It's a sale based on time to market and core competencies and people.”

It's also a sale that will cause radical shifts in responsibility and accountability for IS. In traditional outsourcing deals, most if not all of the shipped-out stuff was a known quantity—legacy applications and infrastructure that internal staff had built and supported for years. But ASPs are usually brought in to fill gaps in IS's application and infrastructure portfolio. The IS staff may not have any background knowledge of the applications and infrastructure that ASPs handle for them.

That could cripple IS's support processes and damage its image with the business. Employees accustomed to calling IS with any kind of computer service problem may resist or become confused when told to call an outsider for support—especially if IS does not set clear boundaries about whom to call on for help under what circumstances.

Even if the boundaries are clear, IS becomes a communicator rather than a doer in the ASP equation. And the feedback loop becomes more deeply layered. When the ASP-hosted e-commerce site goes down, for example, CIOs won't be able to respond to internal complaints until the ASP responds to their complaints. With most ASPs gravitating toward becoming complex supply chains of providers bundled together, the ASP may

have to make quite a few phone calls itself to find out what's going wrong. As we will see in “ASP & Ye Shall Receive” on Page 94, if CIOs do not carefully manage businesspeople's expectations for service and support, their departments' credibility could be harmed.

Worse, with ASPs selling their services directly to businesspeople, IS may not have any opportunity to influence the business decision before it gets made. Rather than contributing to a positive discussion

about adding new business capabilities to the company, IS has only a tactical role: sussing out the ASP's ability to keep company data secure and to integrate it with new ASP applications. Especially on the security front, IS may find itself the technical terminator—busting up ASP deals when the vendor can't provide adequate security for sensitive data that has never before left the safe confines of the company network.

Again, expectations become everything. If IS doesn't define the security and infrastructure integration issues to the business early in the process, the CIO will inevitably be painted as the naysayer who's bogging down the project.

Now is the time for CIOs to take the lead on the ASP discussion, while the market is immature and still relegated to the small and midsize company markets. “It's safe and necessary for the Fortune 500 to start thinking about the ASP model because it will become an important part of the technology landscape for all enterprises over the next five years,” says Audrey Apfel, vice president and research director for GartnerGroup.

“The offerings, the providers and the market are fractured and immature at this point,” she adds. “It's not yet time for the Fortune 500 to jump on the ship, but the ship is definitely coming in this direction.” **CIO**

Christopher Koch is eager to hear your ASP stories at ckoch@cio.com.

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Two examples of how necessity is the mother of inventive compromises, new leadership roles and an unfamiliar world in which trust becomes a major business issue

BY CHRISTOPHER KOCH

Part 2 of a Two-Part Package

For larger companies considering application service providers (ASPs), some trends are already emerging despite the immaturity of the market. First and foremost is the internet, of course. Competition among e-commerce sites is so fierce that leaders of the site need to be ready to make changes and add new functionality at a moment's notice. That kind of schedule is beyond the reach of most internal IS departments, which are struggling to keep up with all the demands on their time and are having trouble finding, hiring and keeping experienced e-commerce staff people. ASPs can get an e-commerce site up and running (and supported) in short order.

ASPs are also providing a good opportunity to fill a specialized niche in a company's application portfolio. Software functionality that is too specialized to be incorporated into big enterprise software packages, like ERP or supply chain planning, and too labor

First Union Mortgage *The Specialized ASP*

When Gary Suess and Joan Sommerer, two non-IS business executives, came to Charlotte, N.C.-based First Union Mortgage Corp. in 1998, their one and only goal was to make the consumer mortgage lending company come alive on the internet. They saw an opportunity to create a competitive advantage for First Union's mortgage unit by offering the industry's first online mortgage application system.

Most bank and mortgage-lending websites already offered mortgage prequalification forms by late 1998, when Suess and Sommerer began hatching their plans. But no one had a full-fledged application system where the customer could get a response (and a legally binding commitment letter) over the internet in three or four minutes. This kind of instant mortgage gratification could sharply differentiate First Union—if it acted before competitors did.

The two began by approaching First Union's IS department in mid-1998 to help them develop an online prequalification form as a preamble to the project. What they encountered was an IS group that was stretched to its limits serving First Union's many divisions' growing demand for

Ye Shall Receive

and resource intensive to be developed internally is beginning to be farmed out to specialist ASPs that can spread the costs of arcaneness across a number of different customers.

Another ASP charm for big companies is the commodity applications that IS spends too much time maintaining and supporting. Some examples include human resource and financial applications. What follows are some examples of the ways companies are using ASP services and, perhaps more important, the effects of the new order on the IS staffs and businesspeople.

internet services—to say nothing of an approaching tidal wave of Y2K work.

Still, IS gave it a try, helping the two build some mortgage prequalification forms for the site. But the prequal form didn't happen as quickly as Suess would have liked. "Going through that process illustrated the bottlenecks you hit with available resources. That led us to consider going outside the organization to achieve what we wanted to achieve," he says.

With IS's consent, the two canvassed First Union's mortgage unit to find out what sort of functionality bus-

A man wearing a cap, glasses, a light-colored t-shirt, and a fishing vest is crouching in a snowy, rocky landscape. He is holding a fishing rod and reel, and a fishing line is visible extending from his hands. The scene is set in a winter environment with snow-covered ground and rocks.

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Outsourcing

inesspeople wanted on the website, and Sommerer rifled through mortgage trade magazines looking for IS vendors that could provide it. She also called mortgage giant Fannie Mae, which had built its own software mortgage engine using Xpede, a small software vendor and nascent ASP in Oakland, Calif. Armed with a shortlist of vendors, the two approached IS in early 1999. Both understood the need to be diplomatic.

"This was treacherous ground we were treading on," recalls Suess. First Union's IS department had a history of building all its applications in-house and had never outsourced anything before. "There was resistance at first from IS," acknowledges Sommerer. "We were breaking new ground here. Most things were done internally, and the idea of having this application hosted outside the company caused a lot of apprehension. We were talking about having an outsider host some of the most sensitive customer information we had—credit histories, Social Security numbers. Having that hosted and transmitted by T1 lines over the internet made everyone nervous."

But Joe Monk, First Union's senior vice president and CIO for consumer lending, had a few other things to worry about besides ASPs. All six of First Union's divisional CIOs were under pressure—direct from the CEO's office—to deliver internet functionality across the company. "We had a declared corporate requirement to take the internet to all fronts," recalls Monk. First Union's internal web monkeys were already spread pretty thin when Suess and Sommerer came along. Hiring more people to staff the project was out of the question—finding the right skills was difficult and unacceptably time-consuming. Monk had to act quickly. Oct. 31, 1999, was the last day he could add new applications to First Union's infrastructure before a Y2K moratorium went into effect, freezing everything in preparation for the date rollover. Building a new application from scratch and delivering it over the internet before the freeze took effect began to look like a colossal stretch.

Despite the seeming intractability of the situation, Suess and Sommerer decided not to read the handwriting on the wall directly to Monk and his staff. "We had to go about it so we weren't attacking people's egos in IT," says Sommerer. "We had to approach it so that we made it clear we



"Most things were done internally, and having this application

didn't have time to wait for this application and they didn't have the resources to do it themselves."

Monk agreed. "We were in a position where we needed to consider any kind of alliances to deliver solutions to the business as long as we could ensure the quality was there to support it," he says. "We didn't need to build it ourselves."

Both lobbied hard for support and were careful to include IS in any meetings they had. Of course, they needed IS to help plan for customizing and integrating the ASP's systems to fit with First Union's, but it didn't hurt to enter that phase of things in a spirit of collaboration. Taking

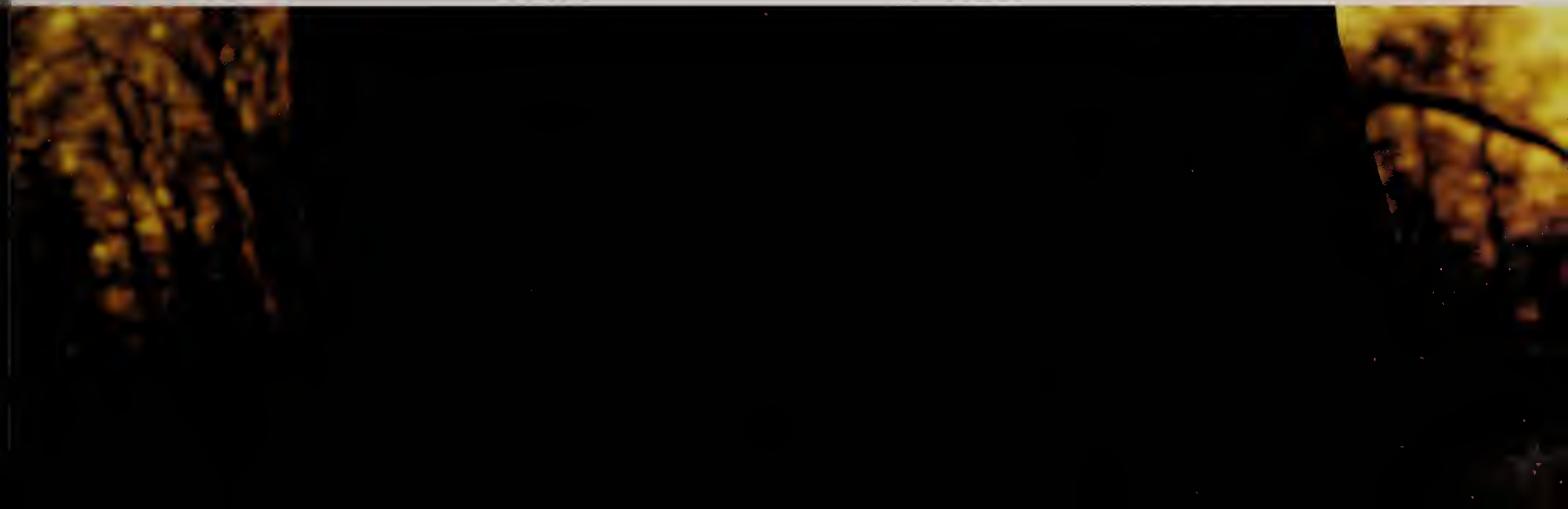
PHOTO BY KATHERINE LAMBERT





hosted outside the company caused a lot of apprehension.”

—First Union Mortgage's Joan Sommerer and Gary Suess, on their decision to go the ASP route



the lead in the vendor search also helped Suess and Sommerer clarify their requirements for the application—a process that often can lead to communication breakdowns between IS and the business.

Still, the process was difficult for everyone involved. Sommerer needed to find a vendor that could meet IS's requirements for experience, data security and integration without compromising the busi-

Suess sometimes had trouble keeping things focused on the core requirements of the site. "It was difficult to make everyone understand what the business requirements were," says Sommerer. "We wanted the online application and the online decision-making capability, and we would not settle for anything less. Pushing that was critical to our success." That meant Xpede got the job—once IS was

comfortable that the young company would be able to scale the application, keep it available all the time and create seamless links into First Union's legacy systems.

So far, so good, say Suess and Sommerer. The site has cut the time a loan officer needs to spend with a mortgage applicant from an average of 30 to 45 minutes to about 5 minutes. Though they won't release specific numbers, the pair say that use of the application has increased 1,000 percent since it went live last October, and it has only gone down once—on New Year's Day 2000. Other than that, it has been available every minute of every day of every week. And the mortgage unit has enjoyed a hefty 500 percent bump in business since the application launched.

OshKosh B'Gosh *Instant E-Commerce*

The internet is relentless not just in terms of its capacity for change but in its demands on IS staffs. Not many IS departments are equipped to support an application that stays on all the time. Not all ASPs are equipped to do it either, which highlights the need for developing clear, strong contracts with ASPs that contain equally clear service-level agreements (SLAs) so that support and maintenance never fail (see "Putting Bite into Your ASP Contract," Page 104).

Indeed, if an IS group does not have the experience developing and supporting an application, the relationship with the ASP is everything. Jon C. Dell'Antonia, vice president for MIS and CIO of apparel maker OshKosh B'Gosh, entered

into an agreement with Pandesic, an ASP joint venture between SAP and Intel, to develop and support OshKosh's e-commerce website. "If you say you're going to get on the internet, you'd better be there, even if it's just one order coming through the site," says Dell'Antonia. "In one day you go from nothing to 24 hours a day, 7 days a week."

OshKosh's deal with Pandesic is frighteningly all-encompassing,



Joe Monk, First Union's senior vice president and CIO for consumer lending:

"We needed to consider any kind of alliances to deliver solutions to the business as long as we could ensure the quality was there to support it. We didn't need to build it ourselves."

ness functionality necessary to the application's success. That meant not rejecting startups—like Xpede, the final winner—out of hand. "Since hosting had never been done before, we didn't have processes in place to determine what standards we needed," says Sommerer. "IS came up with a list of 21 questions that vendors needed to answer to determine whether they would be able to provide adequate security and reliability."

In the rush to qualify vendors' technical résumés, Sommerer and

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and it happened very quickly—from deal to go-live in three months. Not only did Pandesic (and its subcontractors) build the website (to OshKosh's specifications) and its e-commerce tools, but it also handles all the back-end processing and shipping of orders. OshKosh handles fulfillment at its warehouse and sucks transaction data off the website for analysis back at headquarters.

With so much hand-holding going on here, one might expect that

the contract goes beyond the traditional outsourcing boundaries. And it does. OshKosh not only pays Pandesic a monthly fee for hosting the site, it also hands over a share of the online revenues. "We like that arrangement because it gives them a strong incentive to push forward," says Dell'Antonia. "When we do better, they do too."

Sometimes the partnership seems so close that it's like a marriage—Pandesic's team and OshKosh's IS staff have to adjust to the ways

Putting Bite into Your ASP Contract

When it's time to negotiate, remember these tips

The same things that make ASPs so darn tempting—no network or application license fees to worry about, no servers to upgrade, no support or implementation staff to care for—also make them tremendously risky. The newness of the market and the herds of interlinked vendors that lurk beneath the shells of most ASP offerings add fragility to even the best-written ASP contracts. Here are some tips on the contract process:

Keep the contract term as short as possible

"Who knows what web hosting will look like in six years?" asks Douglas Plotkin, a consulting manager at the Stamford, Conn.-based research company Meta Group. "Mainframe outsourcing contracts used to be 10 years. Writing a contract for that length doesn't have a meaning except to lock you into an argument with a vendor."

Benchmark through vendor competition

Pricing for ASP services is still in the "Well, it depends" phase. Most buyers benchmark ASP prices by trying to estimate what it would cost to provide those services themselves. But how can you reliably build in all the cost components if you've never done them before? Instead, Plotkin recommends having three or four ASPs submit detailed bids for your work.

Establish a metric—any metric—that tracks your usage growth

If you don't agree on a metric to measure

growth against the price of the service, Plotkin cautions that when the contract renews you could find yourself at the mercy of a vendor that exploits the lack of data "to justify a surreal cost increase." He recommends using one or two simple metrics—the number of users of the ASP application, for example, or the number of transactions processed through the e-commerce website, or the number of business documents developed using the application—in order to track the growth in usage. Agree on a firm price for how much more the service will cost as usage grows.

Create performance penalties that truly motivate

ASPs make money by serving as many customers as possible. If stretched—as most inevitably are—they will respond first to the contract that screams the loudest. According to Plotkin, many contracts barely whimper. "I've seen [some] where the penalty for downtime is 3 percent of the monthly fee," says Plotkin, meaning it just might be "cheaper to leave you down than bring you back up." And when they do bring you back up, there may be no incentive to fix the underlying problem—as opposed to just patching it when it breaks. Plotkin recommends making the penalties escalate each time a problem recurs. Stretch the interval for counting recurrences over as long a period as possible—at least a few months.

Have an out that won't cost you anything

In case of chronic underperformance, you'll need to be able to get out of the contract and find a new ASP. Expensive exit fees and troublesome software ownership clauses can get in the way. You need to be able to get out clean and take whatever you need—data, customized applications—with you. If this means having to buy licenses for your customized software up front, it could be worth the extra dough. Otherwise, the ASP owns your software, and you may be stuck if you want to make a switch.

Don't expect to cut costs unless you want lower levels of service too

If you're a big company, chances are your ASP contract will be for niche services rather than massive outsourcing. Don't expect to save money on a niche offering—the scale isn't there for the vendor to customize it to your needs and run it cheaply too. Most mature outsourcers like to keep profit margins above 25 percent, says Plotkin, which means an outsourcer has to run the application at 65 percent of your cost of running it to make the margin back and lower your cost by 10 percent. That's not easy to do. "As an outsourcer, I have to drastically cut my own costs to get a profit and cut your costs," he says. "And now you're saying improve service levels? This is why SLAs fail. The customer is expecting both, and that equation just doesn't close."

—C. Koch



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of the other if things are going to work. For example, Dell'Antonia can only pick up the phone and call Pandesic now, he can't roll up his sleeves and go fix things. He cannot call any of Pandesic's supply chain of providers either, even if he's pretty sure that one of them is causing a problem.

A few days after launching, the site went down for 24 hours while Pandesic swapped in a new piece of software that wasn't quite ready when the site went live. When he learned that the site was down,

the fact that you have a third party in there and their sense of urgency may or may not match yours," he says.

That feeling of powerlessness becomes even more acute when the calls begin coming from internal businesspeople who can't access the site. Dell'Antonia had to make people at OshKosh understand that he no longer has direct control over all the company's IT assets.

Likewise, he has to diplomatically tell businesspeople to wait for new functionality to be added to the site while he pleads with and/or

bullies Pandesic to move an action item onto its priority list—knowing full well that Pandesic's other customers are making the same kinds of demands. For example, OshKosh salespeople want to offer conditional free shipping (for first-time customers or big orders, for example), but Pandesic's software isn't equipped to parse out the qualified customers yet. "They say they want to add the free shipping option in about six months. We say we want it in six weeks."

Dell'Antonia is the man in the middle. He has to sort out requests for changes from within OshKosh between those that are critical to the online business and those that are "nice to have" but aren't really urgent and could cause undue friction between him and Pandesic if he pushes too hard. He also needs to keep options open for going to other providers to get the technology his businesspeople need if Pandesic cannot provide it. That means perhaps having his own staff or yet another third party get involved in building something while all the while making sure that it will hook into Pandesic's back-end infrastructure (which is owned by Pandesic, not OshKosh). It's a complex subject that Dell'Antonia has not yet broached.

To keep the relationship strong, Dell'Antonia has weekly meetings with a Pandesic project manager, and he keeps a Pandesic executive's phone number in his Rolodex for the occasional call to higher-ups.

In his mostly smooth (he says) marriage to Pandesic, Dell'Antonia has taken on the role of a relationship manager while shaking off

the traditional IS role of technology provider. "If I had to do it over again, I would," he says of the Pandesic partnership.

His new role—while uncomfortable at times—represents the future for every CIO. **CIO**



Jon Dell'Antonia, vice president for MIS and CIO of OshKosh B'Gosh:

"You have to come to grips with the fact that you have a third party in there and their sense of urgency may or may not match yours."

Dell'Antonia called Digex, Pandesic's web hosting provider, to find out what was wrong. "We didn't have the right to contact Digex, and the Digex people pointed out quite forcefully that Pandesic was their customer, not OshKosh."

The experience gave Dell'Antonia a sense of powerlessness that he is not eager to repeat. "You have to come to grips with

Christopher Koch welcomes your reactions to this piece at ckoch@cio.com.

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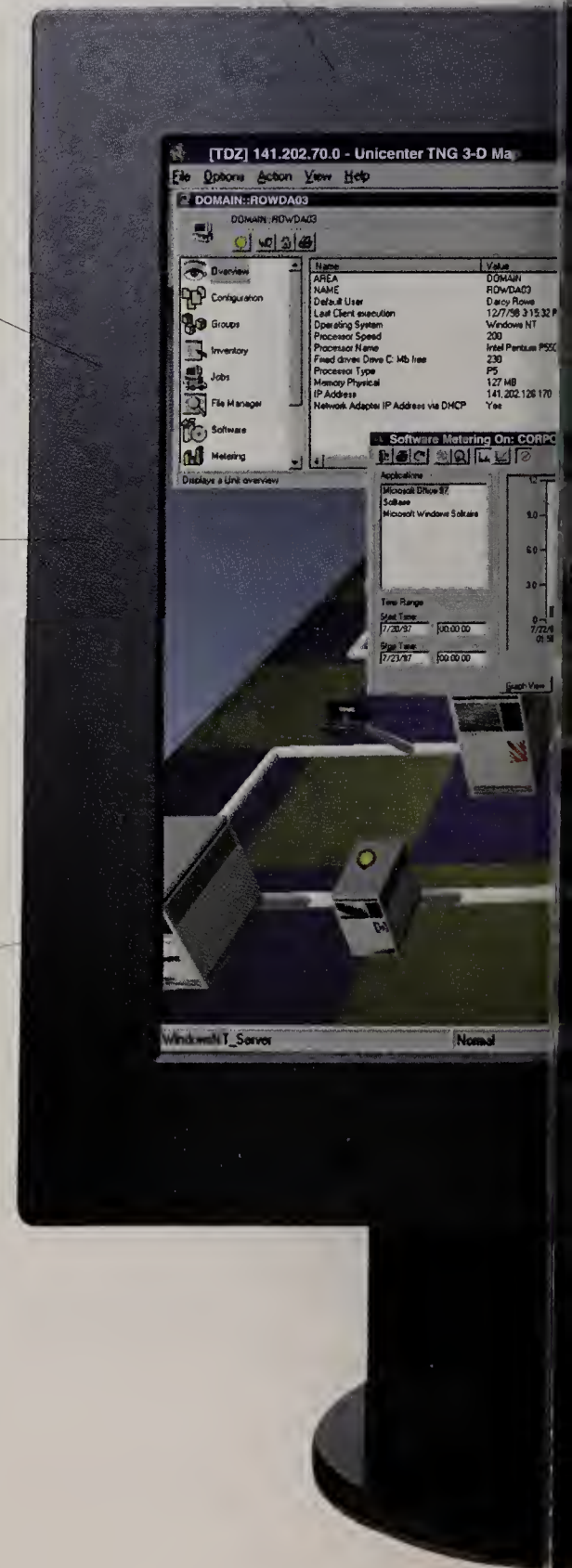
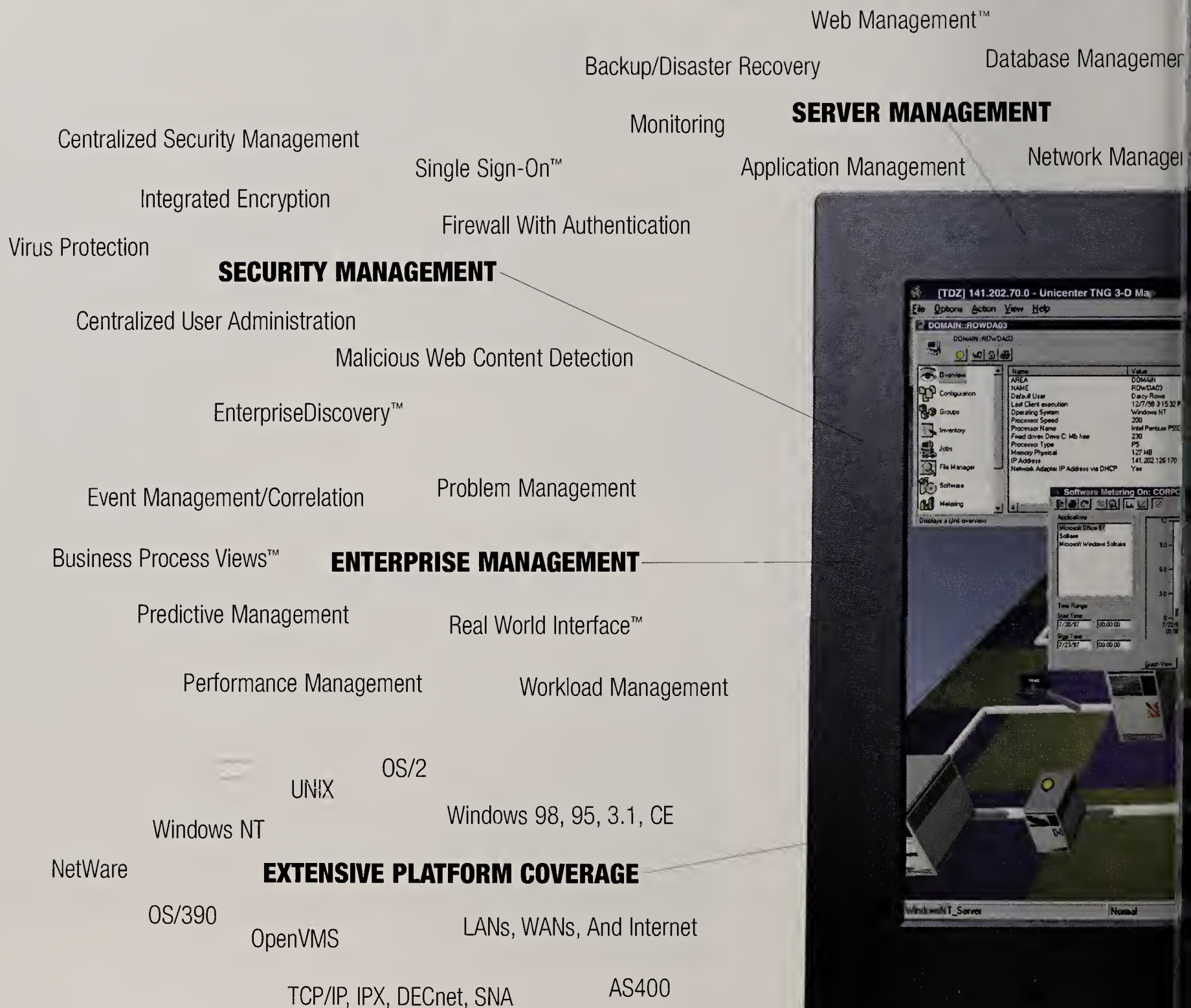
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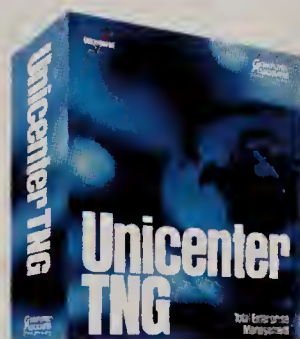


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Household Income	\$53,000
Home Owner	No
Current Services	Checking Account Savings Account Student Loan Car Loan Credit Card
Credit Rating	820
Usage Profile	On-Line Banking Account Above-average ATM usage Direct Deposit Electronic payment of Student Loan, Car Loan, Utilities 8 payments remaining on Student Loan 21 payments remaining on Car Loan
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So What Is IT Really Worth...

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Wrong. It may be true that the pressure to implement quickly is fierce in this internet era, but that doesn't mean it's any less important to assess the value contribution of your IT investments. In fact, a number of forces are combining to make valuation more important than ever, and the net may even be one of them. First, the post-Y2K backlog means companies must be especially selective in prioritizing and choosing among new IT investments. Most larger companies have now also completed their ERP implementations, and for many the payoff doesn't look good. That tends to make CEOs sit up and take notice. Similarly, just about everyone is now online, thanks to what originally looked like a no-brainer decision: Competitive necessity combined with what promised to be a relatively small investment. But today, the ongoing costs of hastily built e-commerce systems can add up faster than the payoff, causing upper management to wonder what happened.

It all creates extra pressure on the CIO to prove the value of IT—both for individual investments and, on a higher level, for the IS organization as a whole. In this *CIO* Special Report, we've done our best to help you sort through and make sense of the challenges, methods and possible actions. Because when you're asked "What's IT worth?" you'd better have an answer. And a good one. **CIO**

Got Value? Share your frustrations and successes in sizing it up with *CIO*'s value and measurement expert Katherine Noyes at knoyes@cio.com.

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For CaliMed CIO David Shepard, a new CFO brings pressure to measure and prove the value of IT to his company and its shareholders. How will Shepard apply measurement discipline while keeping the corporate turnaround speeding ahead?

BY RICHARD PASTORE

Noodling Numbers

Wondering how best to assess the value of IT? This fictitious case study covers

- ▶ Value assessment in an environment of urgency
- ▶ Selling investment leaps of faith
- ▶ Allocating costs to achieve maximum business accountability
- ▶ Partnering with a new CFO

A year ago, when CaliMed CIO David Shepard was feeling particularly paranoid about his new job, he might have viewed this new CFO as some minion of hell, loosed upon the streets of Northern California with the singular purpose of hunting him down to torment his living soul. But today a more relaxed, more mature Shepard can see that Scott Brunt is no demon posing as a bespectacled MBA and CPA with a penchant for startling Bill Cosby-style sweaters. In reality Brunt is simply another challenge, a tough-as-nails chief financial officer that CaliMed brought in last month to apply more fiscal discipline to the in-progress turnaround.

CaliMed CEO Maureen Carleton, who had promoted Shepard a year ago when she took over the floundering company, was an aggressive proponent of IT as a competitive weapon. At first she'd insisted on keeping spending level, but increasingly ambitious initiatives had blown the budget. Now the company's board was concerned that the promised turnaround payoff had yet to materialize, and it wouldn't be long before Wall Street got impatient as well. Enter Mr. Brunt, former CFO of a midsize engineering company, on a mission to determine the "value of IT to this business" and to "project, evaluate and audit the return to the bottom line and the shareholders' pockets."

Knowing that *value* could mean something different to everyone, Shepard probed Brunt for his own definition during their first meaningful one-on-one encounter: a lunch at a Thai restaurant at Shepard's invitation. As he made what seemed to Shepard a showy display of his facility with chopsticks, Brunt explained that he viewed value as a broad payoff and the ultimate outcome of all the turnaround measures now underway. He saw the value coming from the business initiatives and processes that IT was enabling; he seemed to recognize that technology alone wasn't the creator of value. But at the same

time he contended that IT was the most costly component of these initiatives, and therefore there was a special obligation to measure its costs and payback—its ROI and efficiency. What measures did Shepard already have in place? What was CaliMed's total cost of ownership? Where were the savings from bringing IT to bear? What business growth was IT delivering for its continually expanding dollar?

All good questions, but Shepard had few good answers. And he couldn't use chopsticks worth a damn.

In the past year Shepard and everyone else had moved at breakneck speed, planning and implementing initiatives as fast as possible—a worldwide knowledge-sharing intranet, a website for consumer sales of homeopathic remedies and the integration of a number of acquisitions. CaliMed already had project management guidelines—time and budgetary checkpoints (many of the latter having been missed lately). But there hadn't been time or patience for establishing baseline measures and implementing complex valuation methodologies. There was barely enough time and energy for planning, let alone metrics.

Shepard's appetite deserted him; he'd pushed and poked at his vegetarian pad thai,

CIO David Shepard, along with the other executives of the fictitious pharmaceutical company CaliMed, was introduced to CIO readers in 1999's Summer Leadership Curriculum. To see how Shepard dealt with previous challenges and to learn what advice he received from his real-life leadership coaches, see "Stranger in a Strange Land," CIO, June 15, 1999, or www.cio.com/printlinks.

CaliMed Inc.

COMPANY: CaliMed is a fictional, midsize California-based pharmaceutical company.

BUSINESS ENVIRONMENT: CaliMed is one year into a turnaround plan based on killing unprofitable alliances, jump-starting product development through new acquisitions and creating new revenue opportunities. Although the company has grown revenue 27 percent in one year and has increased the number of products in its pipeline by 40 percent, profit growth has yet to materialize. And IT costs have soared.

ACTIONS: One year ago, IT Director David Shepard was promoted to CIO. Now the CEO has filled the vacant post of chief financial officer, and the new CFO, Scott Brunt, is anxious to prove that he can bring fiscal discipline to the turnaround.

OBSTACLES: Aside from project management checkpoints, CaliMed has little experience applying metrics to IT value. The need for speed and a growing sense of urgency heighten the tension under which the CIO and his IT department labor.

reducing it to an unappealing mush. He was tempted to tell Brunt that if the stockholders were getting anxious about profits, it didn't make a lot of sense to slow down to measure the nickels and dimes. He was also tempted to say that since the business units were primarily responsible for value creation, then their leaders should be the ones to measure and audit that value.

But instead of saying these things, Shepard launched into an explanation of the measurement-confounding complexity of any given system. Take the worldwide intranet. It would be tricky to allocate the costs of the intranet's infrastructure, very difficult to factor all the costs of changing the way knowledge workers worked and even harder to quantify the benefits of knowledge sharing to the company. Brunt nodded sympathetically but didn't give an inch. He wanted an accounting of CaliMed's major existing initiatives and a valuation plan to apply to future endeavors.

In the days that followed, Shepard stud-



Holloway Sportswear with Intenia

Sidney, Ohio - Holloway Sportswear and Intenia recently celebrated a successful implementation of the Enterprise Application Solution, Movex. Roy Leasure, President of Holloway Sportswear, accepted the "Go Live" award on behalf of the implementation team.

Both teams worked closely together to help achieve the key milestone in the plan to support Holloway Sportswear's strategy for the future...



Global Expansion. "Like other industries, the sporting goods industry is on the threshold of an e-commerce revolution. Smaller companies just don't have the resources to do it on their own. It pays to have an Internet-savvy partner who can get the job done and let us focus on growing the business," said Steve Jenkins, Information Systems Director for Holloway Sportswear.

Holloway Sportswear manufactures a full line of high quality sportswear for the sporting goods and promotional products markets, with items such as monogrammed and embroidered awards, corporate and letterman jackets, golf shirts, and fleece vests.



ied what could be done, talking with his senior IT people and his closest executive peers.

It was clear that all measures of value, and all expressions of that value, had to be in terms of business benefits, either savings or contributions to the bottom line. A proper before-and-after calculation would require Shepard to tediously reconstruct baseline measures of productivity, time to market, expenses for employee travel, and so on, associated with the older processes that had been or were still to be replaced.

CaliMed's newest project was a business-to-business e-commerce system to enable

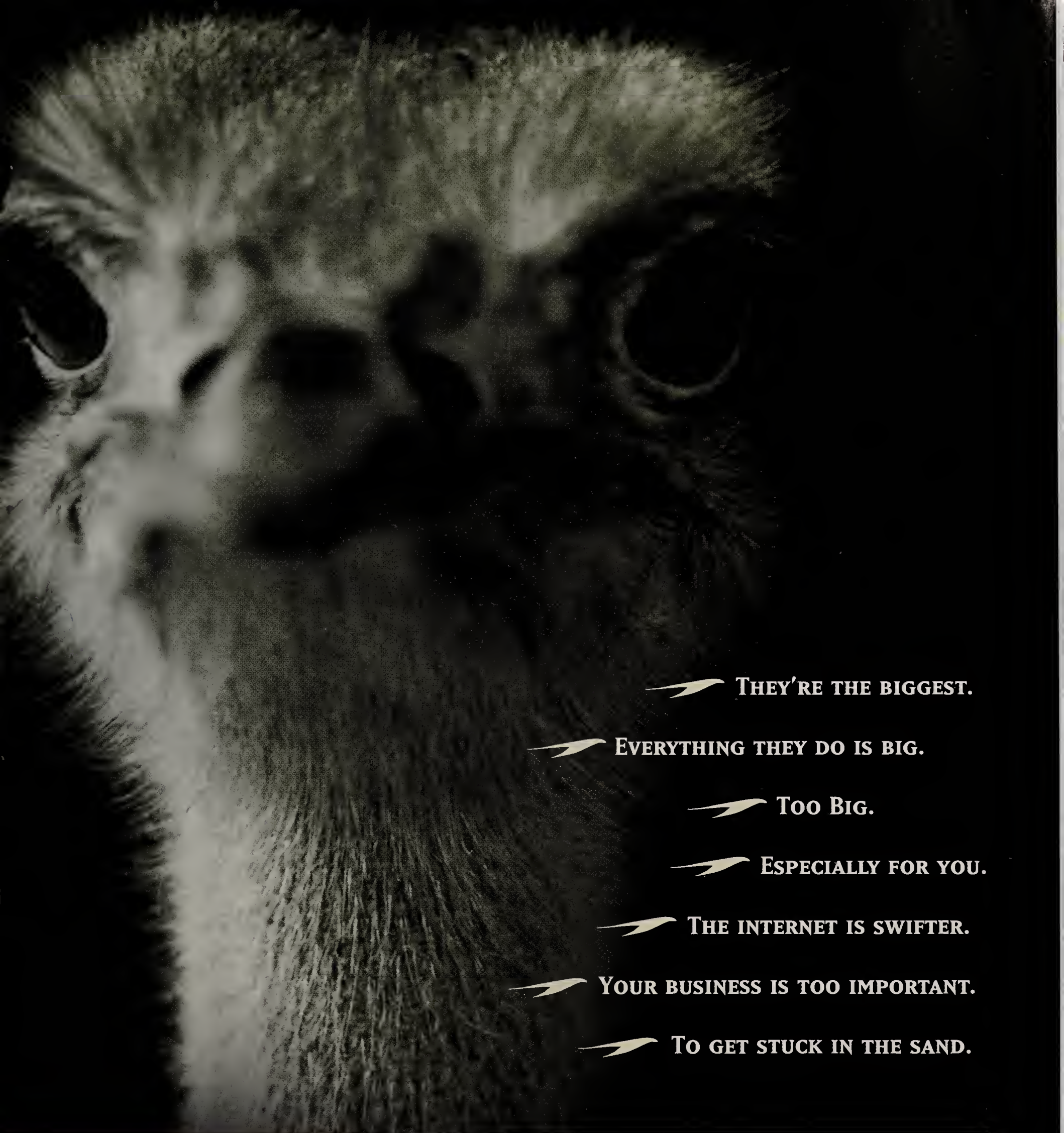
just-in-time inventory replenishment with all of its distributors. The system, which had just entered development, would replace the EDI arrangements CaliMed had made individually with its largest customers. And it would be scalable to the smaller outlets that had balked at adopting costly EDI. The new system had seemed like such an obvious strategic win for logistics that no thought of value assessment had been considered. What method could be applied to measure the value of this initiative?

CaliMed's CTO, Greg Devlin, raised the idea of the balanced scorecard. Devlin thought the measurement tool could be

applied to this and most other IT projects. Still, the effort would take time and resources that were scarce on Shepard's staff. His biggest fear was that he and the IT organization would be burdened with the whole valuation effort, though the realization of value would be in the hands of the business unit leaders. How could he make sure they would take accountability and not leave him holding the bag?

Making things worse, the IT budgeting system was hardly conducive to accountability. Shepard was in charge of a central pool for funding, which all the business functions had grudgingly contributed to a year ago.





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Back then, the IT budget was a sort of emergency fund to get things rolling quickly. A year later, it was clearly time to create a more mature way of financing initiatives. Shepard had discussed chargeback schemes with his external network of CIOs and was drafting a plan for this. But would that ensure a fair accountability for costs and value across the enterprise?

Shepard decided to turn to three outside experts for some quick coaching—measurement and value guru Howard Rubin, Steve Sheinheit, executive vice president of enterprise systems solutions at The Chase Manhattan Bank, and for that unique CFO perspective, Raghavan (Raj) Rajaji, chief financial officer of Manugistics Inc. Shepard gathered them on a conference call and outlined his precarious situation.

Do the Next Right Thing

RAJ RAJAJI: David, the first thing you need to do is align yourself with the CFO. Realize that your goals are very similar to his. You should get closer to Brunt and convince him that your contribution to the company is in line with the business's strategic initiatives. Try creating an early win by finding a pet project of his and getting it done quickly. That will show him you understand the issues of the company.

STEVE SHEINHEIT: That's good advice. I'd add that there's a business dialogue that needs to be created. We live in a very complex world, with increased pressures of timing, investment costs and risks. Too often, we want to describe all that complexity to the CEO or CFO. What we're saying is, "Commiserate with me, let me show you how complex and risky this is, and how you really need me." But that's exactly what they *don't* want to hear. They want simpler messages that they can translate into business terms: One, what's the investment in dollars; and two, what's it going to do for me—not how hard this is for you to do.

SHEPARD: Oops. I think I've already fallen for that temptation. But wouldn't the pres-

Meet the Coaches



RAGHAVAN (RAJ) RAJAJI

As executive vice president and CFO at Manugistics in Washington, D.C., Rajaji oversees finance, accounting, planning and investor relations. Previously, he spent four years at BancTec as CFO, and 18 years at Occidental Chemical Co., where he also rose to the CFO position. Rajaji received a BS from the University of Calcutta, and a master's in business administration, with an emphasis in finance, from Virginia Polytechnic Institute and State University. He currently serves as vice chairman of the Financial Executives Research Foundation, one of North America's leading financial research organizations.

HOWARD A. RUBIN

Rubin is a professor and chair of the department of computer science at Hunter College in Pound Ridge, N.Y. He also is a research fellow at Meta Group in Stamford, Conn., and a member of Meta's board. Rubin is an internationally recognized authority in measuring IT performance, the business value of technology and software process. His Worldwide IT Benchmark Project has been recognized as the world's largest IT productivity, quality and performance benchmark database. He is also author of *The Software Engineer's Benchmark Handbook* and former editor of *Information Technology Metrics Strategies*.



STEVEN L. SHEINHEIT

Sheinheit is executive vice president of enterprise systems solutions at The Chase Manhattan Bank in New York City, responsible for enterprise systems and programs including corporate applications, groupware and internet services, and architecture and standards. He is a member of Chase's management committee and technology governance board. Sheinheit's career spans over 25 years in management of IT in the financial services industry. During the mergers of Manufacturers Hanover Trust, Chemical Bank and Chase, he played key leadership roles in architecting and merging the banks' systems. Sheinheit is a graduate of the Harvard Advanced Management Program and has an MBA in Operations Research from Baruch College.

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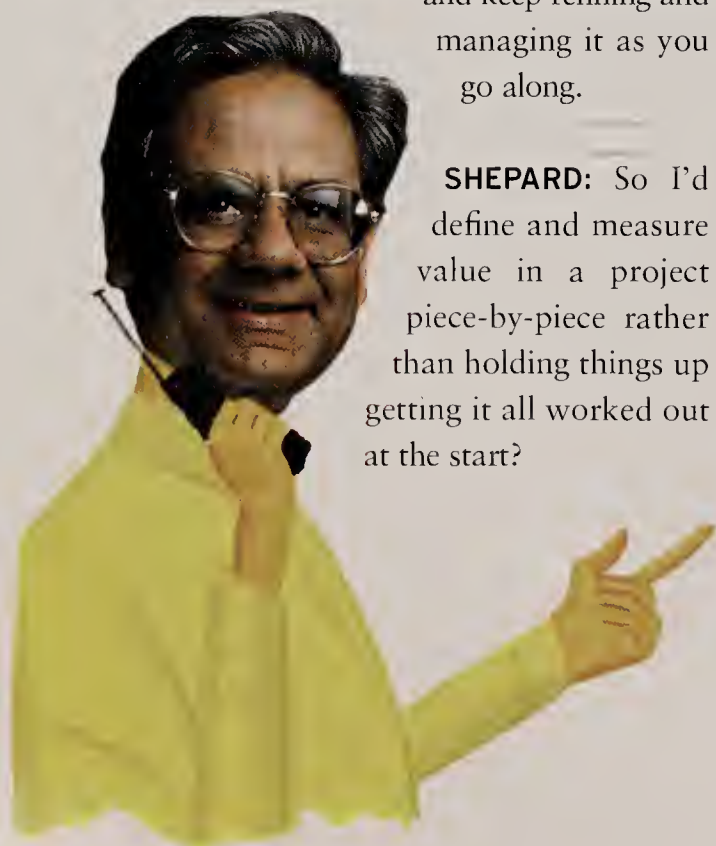
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sure of internet time be one of those simple messages: Can we spare time on valuation exercises when the rest of the world is rushing past us?

HOWARD RUBIN: It's true you can't hold up a project you need next week with three months of analysis. But you can make the measurement fit the time. On the development side you've got to prep your organization to have new, fast development processes, to put out small chunks of a project quickly. On the valuation side, you've got to impose more of a venture management approach, where you build a continuous value case and keep refining and managing it as you go along.

SHEPARD: So I'd define and measure value in a project piece-by-piece rather than holding things up getting it all worked out at the start?



SHEINHEIT: I think that will work for some things, where you define these chunks along the way that will return business value. But some of your major strategic investments will need to be valued holistically because they can't be chunked out. For these, I like to make management an offer they can't refuse. I would say at worst it's a break-even proposition. We think it will be much better, but we won't be able to prove it until later.

Again, Alignment, Again

SHEPARD: That sounds like our world-wide knowledge-sharing intranet. We launched it about a year ago on a leap of faith that there would be payoff when people started using it in volume. I don't think Brunt is a "leap of faith" type of guy, though. He wants dollars and cents.

RAJAJI: It could be that because Brunt is new to the company, he is testing to make sure his CIO is aligned with the business. Once he is comfortable with that, then I think Brunt will start looking more at qualitative measures rather than financial ones. But until he's convinced that you are in step with the business, he's throwing these financial measurement demands at you.

RUBIN: The CIO always needs to show that resources are aligned with corporate priorities.

SHEINHEIT: Absolutely. What are the things that are really important? The CFO is not interested in every project. He wants to know if the IT agenda matches the business agenda. Projects have to move the company into the future, allow it to compete better. The key is to have the IT agenda articulated in a way that the business can understand.

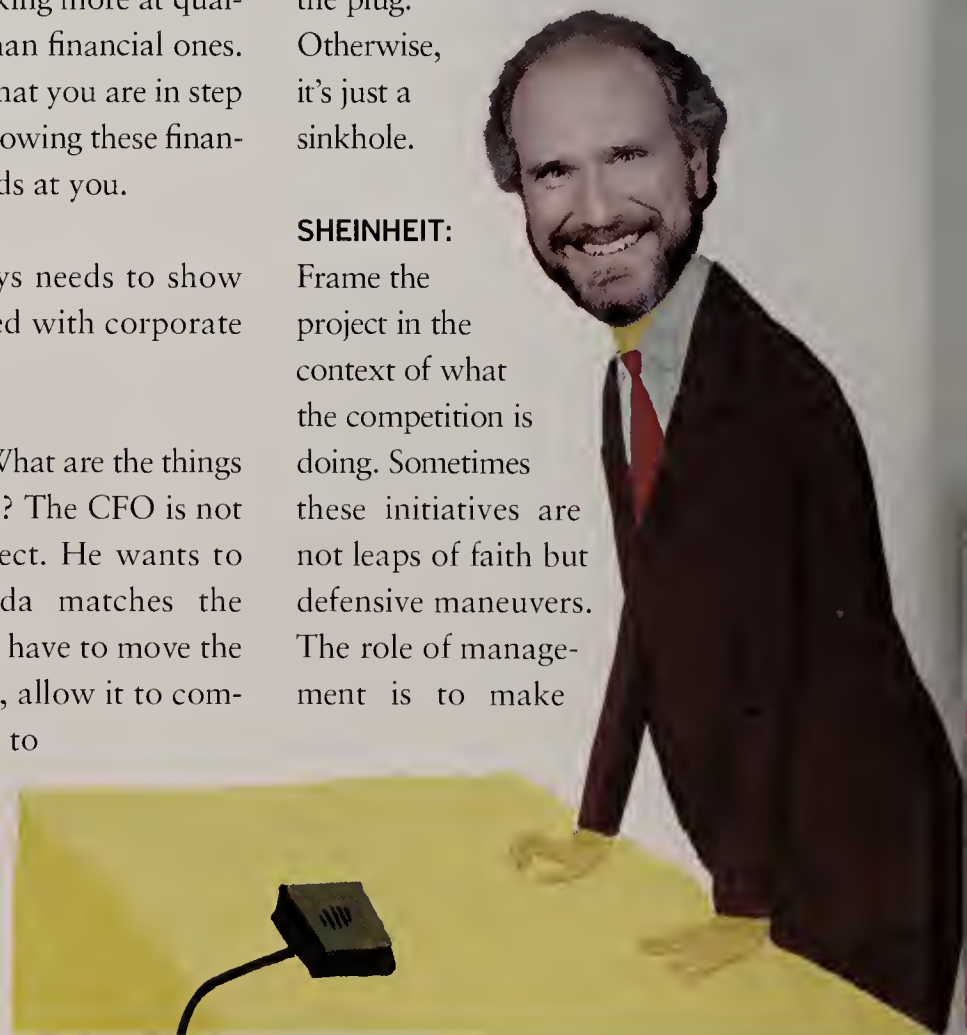
SHEPARD: I assume



that if the CFO perceives that alignment, we can better convince him of the value of these "leap of faith" projects, right?

RAJAJI: Yes, but a leap of faith doesn't mean you jump in with no limits, no understanding. You must have measured checkpoints, budget constraints, and so on. A leap of faith just means it's hard to pin down a financial measure of the benefits. But you need to know when it's working or when to pull the plug. Otherwise, it's just a sinkhole.

SHEINHEIT: Frame the project in the context of what the competition is doing. Sometimes these initiatives are not leaps of faith but defensive maneuvers. The role of management is to make

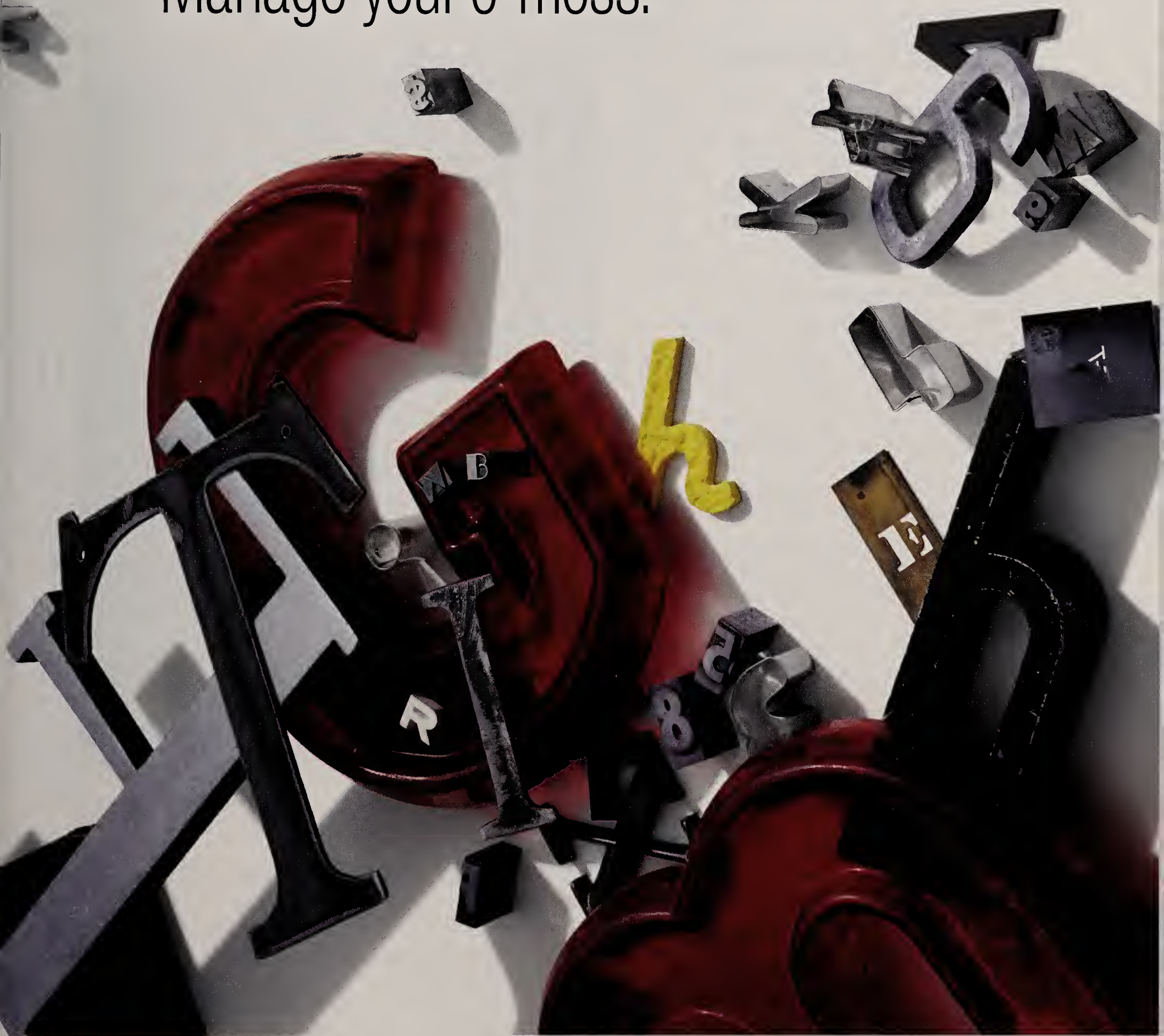


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some bets—some defensive, some offensive.

RUBIN: An organization must view what it's doing as a risk portfolio. The risks could be technology, size, timing or, in cases like we're talking about, the fuzziness of the benefits. If you have a strategic initiative that intuitively makes sense but it's hard to quantify the benefits, put that into the fuzzy-benefits category of risk. That's your framework for it, and the organization can compare it with the other projects in the portfolio and decide whether it has tolerance for it.

Try Benefits Management

SHEPARD: Regardless of what kind of project we undertake, Brunt has asked me for a disciplined methodology to apply. Right now we have budget and development milestones and checkpoints. What more benefits-oriented measurement tool can I adopt across the portfolio?

RUBIN: There is a concept called benefits management; it's a step-by-step plan for making sure the benefits are realized. Take something like your internet-based inventory replenishment system, which has external distributor customers. Or maybe your intranet, where the customers are internal. You have to make your CFO and the rest of the executive team realize that there's always some kind of adoption curve for systems that try to change the way people work. You will have to convince customers to switch, so there will be an initial period where they are learning the system but are dubious. Then there is a crossover period where they start using the system. The third phase is where you'll get the financial benefits.

The measures are different at each stage. When people are learning, you're watching how many are going to the training. When you are in the crossover stage, you are tracking use of the system and movement away from redundant systems. And finally, you measure from the benefits perspective. So you have to make the organization aware of the transitional stages and the different

measures of uptake, penetration, proper usage and, finally, the benefits.

SHEPARD: Even when we get to the benefits stage, for something like knowledge sharing, it's got to be a real challenge to quantify the return to the bottom line.

RUBIN: Not really. That return should show up by shortening business cycles, reducing rework. It should also have an impact on innovation rates, especially in the pharmaceutical industry. IBM's knowledge-sharing intranet was measured by amount of use, growth in the user community, products

pany's ability to learn and innovate.

RUBIN: The balanced scorecard is a good framework to codify the business vision. You can run all aspects of the business through it; it's your basis for understanding the company's value chain.

RAJAJI: It's an excellent measure as long as the company is using it for *all* decision making, not just for IT. You must have consistency within the company for what it's used for and for what the assumptions are behind it. Using it only for IT value would lead to wrong conclusions.

"At Chase, we want investment in IT to be a business line item, so the business units manage it as they would any other major expense."

—Steve Sheinheit, The Chase Manhattan Bank

created by that community, how it affected business processes and their innovation rate. When you go to measure, go back and recall what the motivation was for doing this stuff, and apply measurement to those value areas. If you use the balanced scorecard method, some very tangible things should show up.

How to Keep Score

SHEPARD: I was going to ask you all about the balanced scorecard. It seems like something I can apply to measure just about any kind of value.

SHEINHEIT: The concept is a good one because it balances traditional financial measures, like ROI and net income, with operational metrics—customer satisfaction, internal business processes and your com-

At the same time, you don't want to go to the other extreme and push all the responsibility for using it onto the business units. I've seen that happen, but that's the wrong thing for the CIO to do. That will backfire on you, especially with a new CFO. You're a partner with the business.

SHEINHEIT: Right. But it's very critical here that in that partnership the business has the lead. IT has the primary responsibility to get a system in on time and on budget. It's the business's primary responsibility to understand how that system manifests itself in lower costs and higher value. IT may take a significant role in how that happens, but this is a clear place where the business must be leading.

SHEPARD: Pete Lucibelli, our head of sales,

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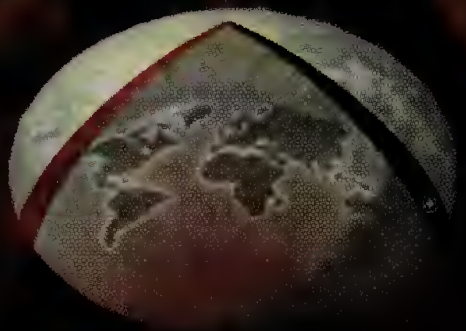
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likes the balanced scorecard concept. I'm sure I could encourage him to adopt it. But to apply it enterprisewide, we'd need the CEO to back it. And Brunt, obviously. Maybe this is something Brunt can collaborate with us on. He can show us how to use it. That ought to make a new CFO feel comfortable and useful at the same time.

RAJAJI: That's good political thinking.

Get Out of the Pool

SHEPARD: Thanks, but I think I also need to make a big change to our funding mechanism to ensure this partnership with the business. Right now the IT budget is a centralized pool controlled by me. This isn't consistent with the business having a leading stake in value.

SHEINHEIT: The word "pool" makes it sound like there's no accountability. At Chase, we want to make sure the total cost of ownership is understood within the businesses. We allocate back to the businesses on the basis of actual usage. We want investment in IT to be a business line item, so the business units manage it as they would any other major expense.

RAJAJI: New initiatives should definitely be justified and paid for by the business. They should be putting it in their budget, just like any other investment—both the new initiative and what it takes to maintain it. You shouldn't be getting much resistance from the business leaders in getting IT costs built into their business cases. If a business leader knows it's important, he or she will be willing to pay for it.

SHEPARD: For new development, I'd agree with you, Raj. But there's been resistance to the idea of allocating infrastructure investments.

RAJAJI: Infrastructure is harder. I don't know any business that likes to pay for this. If you've been lax about allocating infra-

structure costs to the business units, then you need to educate the leaders that these are the shared costs of doing business, and they need to have enough profitability to offset those costs.

SHEINHEIT: You can charge back the infrastructure and major new development costs to the business units, but capitalize them over time; that works best for major investments. That way the businesses don't take that hit up front to their bottom lines. They pay later, once the technology has been implemented, based on who actually ends up using it. Even then, to charge these costs back, you need business buy-in at the highest levels.

The other place you might run into trouble is when people don't understand the potential that costs will escalate over time. You

have to get that understanding up front. Volume growth, new business requirements, ongoing code maintenance and technology replacement are all sources of future expense growth. The business needs to understand the drivers of expense as well as accountability for investments.

SHEPARD: Thanks guys. You've given me a lot to mull over—ongoing value measurement, benefits management, balanced scorecard, cost allocation and aligning with the CFO. I think I'll have another talk with Mr. Brunt about this, maybe over dinner. This time at a restaurant with forks. **CIO**

Send suggestions for future Dave Shepard case studies to Dave's old high school buddy, Senior Executive Editor Richard Pastore at pastore@cio.com.



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Determining the bottom-line contributions of all those intangible IT benefits may not be easy, but it is possible

BY TRACY MAYOR

So you've finally finished rolling out that new ERP system. Can you say by how many thousands it will increase the bottom line in FY 2004? How about your web initiative—you just had to have it, of course, but is there any way to state specifically and accurately how it increases shareholder value?

For that matter, just what is information technology worth to your organization? Some CIOs and technology champions say a question that broad is flat-out preposterous, but others aren't so sure anymore.

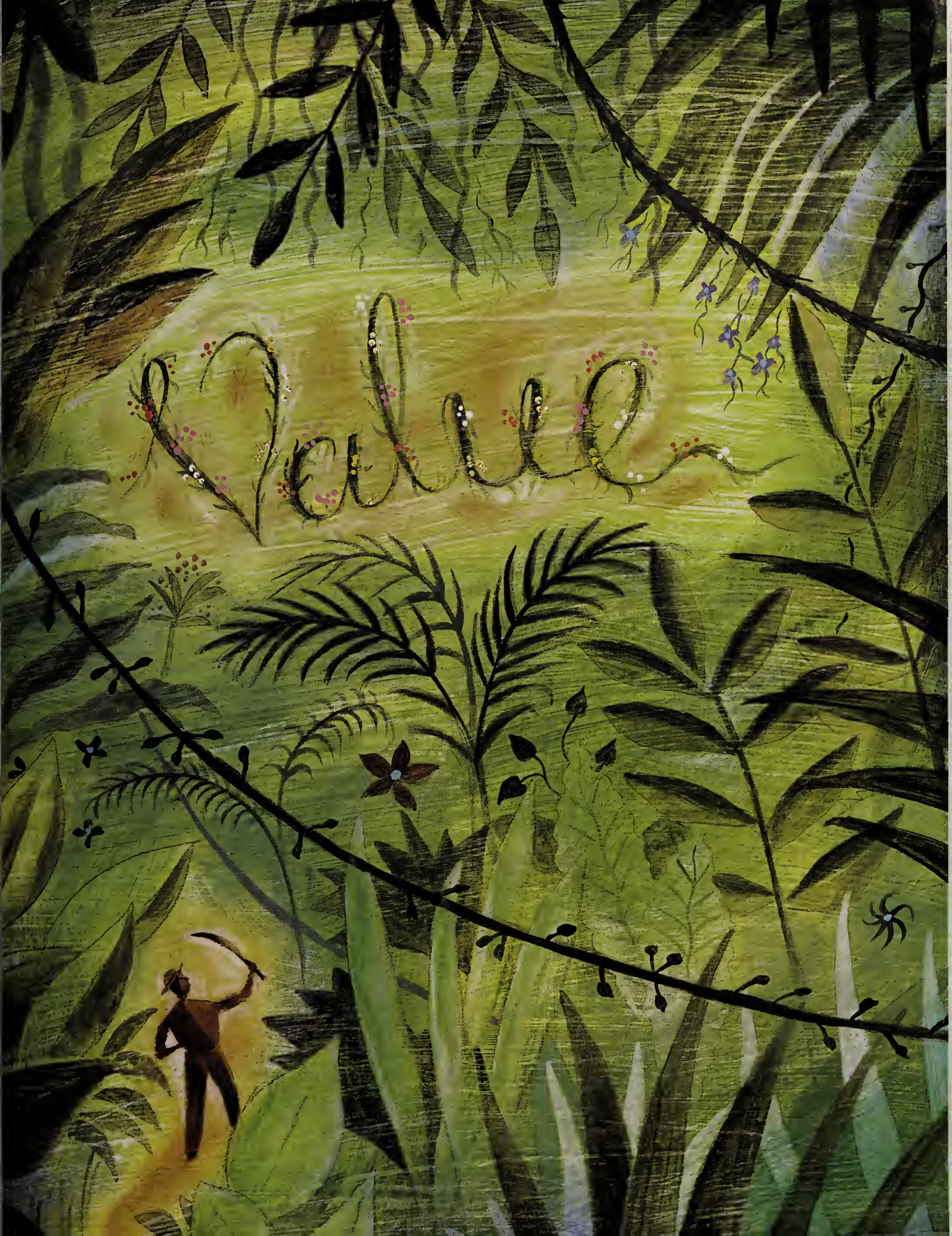
For an increasing number of executive and financial officers, vague promises of productivity enhancements and cost cutting are no longer enough to justify IT's ever more voracious budgets. Suspicious over the Y2K doomsday that wasn't and bowled over by the costs of CRM, SFA and other multiyear, multimillion-dollar systems, executives want to know not just what they're getting for their IT dollar but why they should care—two questions that technology valuation programs aim to answer.

IT organizations have not done a good job of quantifying what they're able to deliver, says Michael C. Mah, managing partner at QSM Associates, a Pittsfield, Mass., measurement and consulting company, and editor of the *IT Metrics Strategies* newsletter published by Cutter

Information in Arlington, Mass. "Most projects overrun, and most people aren't able to estimate correctly," he explains. "That drives [executives] to say, 'If you guys are always late and always coming back to the well for more money, what's the value of IT? What's the outcome here?'"

Read this story to learn

- ▶ How various valuation methodologies differ
- ▶ Which methodologies work best for specific projects



To be sure, the IT landscape is already cluttered with metrics that micromonitor any number of traditional technology activities—frames, megs, MIPS, objects, uptime and the like. But because they're internal programming measures that aren't linked to business strategy, they don't matter to the executives holding the purse strings or driving the company's corporate vision. "Function points per work month has been a nightmare," says Mah of one such popular metric. "Even CIOs don't understand a function point from a sausage; it's a dated metric for output."

When it comes time to talk to the CFO, IT departments often fall back on efficiency measurements to prove their worth. "There is a lot of concern about maintaining the [IT] asset and doing a good job of managing IT resources, but you're never going to save your way to prosperity," points out Bob Cawly, senior vice president in the Meta Group's Westborough, Mass., office and developer of the Economic Value Sourced (EVS) valuation plan. Companies need a way to measure effectiveness as well as efficiency, Cawly says, to know not just how a resource is managed, but to quantify how

effectively it was applied.

But by anyone's lights, it's not easy to measure how a new data warehouse contributes to the bottom line or specify the role that IT plays in achieving business strategy. "When you had a new mainframe program that replaced 30 workers, the benefit was obvious," says Douglas Hubbard, a principal at Hubbard Ross in Glen Ellyn, Ill. "But with e-business, groupware and expert systems, you're not doing a head-count reduction, you're communicating better."

How do you value improved communication, increased organizational flexibility



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or streamlined knowledge sharing? Some CIOs would rather not. "When I tell people I believe there are no intangibles, their knuckles get white around their pens," says Hubbard. "It's almost like a religion. People have made a career out of saying that IT is the exception, that they're the only ones who can't do a [cost-benefit analysis]."

A whole school of valuation methodologies has cropped up to try to nail down those

intangibles, make a real and measurable link between technology and strategy, and define and quantify risk in a meaningful way. Most approaches are borrowed from the world of finance and business strategy, but some are tailor-made for IT. (See "Methods to the Madness," Page 132.) So whether you want to quantify your IT assets before a merger, justify that data warehouse, benchmark your technology function against that of another

organization or link your new call center software to that increase in fourth-quarter revenue, there's a methodology you can follow to get the answers you desire.

Make that several methodologies. Or maybe even dozens of methodologies. In fact, with business valuation in vogue, it seems like every consultant to hang out a shingle has developed his or her unique approach to determining value. Finding the one discipline that's right for your needs can be like trying to find the definitive recipe for chicken soup: Everybody claims to love it, everyone looks to it as a magic cure and everybody claims to know the secret ingredient that makes their version just a tiny bit better than the rest.

Fortunately, just as most soup recipes do share a minimum list of common ingredients (say, chicken, broth and noodles), so valuation approaches share a few basic tenets: They aim to forge and enforce an alignment between the IT function and business strategy; they require all parties to articulate what their goals and expectations are for a given IT project (or for the function as a whole); and they seek to help business executives map out a clear hierarchy of priorities.

If those sound like the kind of touchy-feely talking points more appropriate at a weekend offsite than in the CFO's office, rest assured that the majority of valuation plans have numbers to back up their philosophies, in some cases many numbers. "Strategy is often just a set of hypotheses about what's going to be successful," says Randall Hancock, senior vice president of e-strategy for consulting firm Mainspring in Cambridge, Mass., which is currently at work on an e-business version of the balanced scorecard performance measurement system. A balanced-scorecard-based performance measurement system allows executives to test those strategic hypotheses against not only traditional "lag" indicators, such as typical quarterly financial results, but also against a range of less-easily-quantified "lead" indicators, such as customer satisfaction or employee preparedness, and to then make adjustments as necessary.

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Valuation's most crucial contribution to IT might very well be that it maps a clear cause-and-effect relationship between technology and the bottom line. "There isn't a first-order relationship between IT investment and financial outcome," points out David Norton, one of the two original developers of the balanced scorecard and president of the Balanced Scorecard Collaborative, a research and training organization in Lincoln, Mass. "Investment in IT typically has a third-order financial effect," he explains, where, for example, technology improves some intermediate valuation, like customer service, which in turn boosts customer confidence, which finally results in increased sales for the company. What the balanced scorecard and other methods try to do is make visible those intermediate steps, in ways that can be quantified, measured and tracked.

With the need for speed paramount in every sector of business, can any company afford to step out of the stream long enough to undergo a formal valuation process? One valuation company claims it can evaluate an individual project in a day or two; another can install its methodology as a default across an enterprise in about seven weeks. "I can facilitate a scorecard in a matter of days with a client team *if* the knowledge level and understanding of the project are fairly sound," says Andrew de Lannoy, principal with Renaissance Worldwide, a management consulting group in Waltham, Mass., founded by Norton.

That "if" can be something of a sticking point. When valuation takes up too much time, practitioners say, it's because companies find themselves struggling over basic issues regarding project scope, business strategy, market climate, departmental alignment and so on. In that case, consultants say, "wasting" days, weeks or even months is infinitely preferable to pushing forward with an ill-conceived or poorly structured plan that faces a high risk of failure down the line.

To make IT valuation work, advocates say, it has to be embraced outside the IT department. "Sixty percent of tech spending is outside the tech department, so putting this [val-

uation] mind-set only on the CIO is not enough," says Howard Rubin, CEO of Rubin Systems and a Meta Group research fellow based in Pound Ridge, N.Y., who has done extensive work in the area of IT portfolio management. Portfolio management treats technology as if it were an investment fund with risks, yields, benefits and so on. "You have to manage technology wherever it is. Ideally, you manage it from the top down, with a business management team that includes the technology director," says Rubin.

Likewise, companies should avoid adopting stovepipe valuation systems, where every function uses a different set of measures to further different goals. The result can be an organizational cacophony. "Local, narrow metrics can give you diminishing returns," warns David Glassman, partner in charge of strategic initiatives at Stern Stewart & Co.

in New York City, which developed the economic value-added methodology. For example, someone in procurement trying to minimize the cost-per-unit of an item may sign a huge purchasing contract to meet his goal. But if the company has to shoulder unnecessary inventory costs, the procurement savings are negated, and the employee's actions wind up being counterproductive to the wider business goals.

More than one valuation expert warned IT executives to be wary of vendors bearing metrics. As business valuation gains popularity, some vendors are throwing in valuation as a freebie—that is, adding in a set of measures that can allegedly prove their product is worth its price tag and will help CIOs sell the purchase internally.

Like many other business trends, valuation can be misleading when misapplied and

Methods to the Madness

How to get more information on value methodologies

Applied information economics

Uses scientific and mathematical methods to evaluate the IT investment process. www.hubbardross.com

Balanced scorecard

Integrates traditional financial measures with three other key performance indicators: customer perspectives, internal business processes and organizational growth, learning and innovation. www.bscol.com, www.rens.com

Economic value added

Calculates "true" economic profit by subtracting the cost of all capital invested in an enterprise—including technology—from net operating profit. www.sternstewart.com

Economic value sourced

Quantifies the dollar values of risk and time and adds these into the valuation equation. www.metagroup.com (Select the products and services page and then Initiatives—Business Value Consulting.)

Portfolio management

Manages IT assets from an investment perspective by calculating risks, yields and benefits. www.metricnet.com, www.metagroup.com

Real option valuation

Values corporate flexibility above all else; tracks "assets in place" and "growth options" to present the widest array of future possibilities. (Enter "real option valuation" in the search field.) www.pwcglobal.com

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costly and time-consuming when applied for no reason at all. Prices vary widely depending on what methodology you're considering, what consultancy you choose and how deep you want to delve: A one-time analysis can cost as low as \$25,000 to \$40,000, but the majority of firms charge in the \$250,000 to \$400,000 range to value projects with price tags roughly 100 times that dollar figure on up. At the highest end of the market, a global corporation can find itself dropping a cool \$3 million to institutionalize a method across the entire enterprise.

If you're considering a \$100 million global upgrade, spending up to several hundred thousand dollars on valuation makes sense,

Ready to jump in? It's a jungle out there, but we've managed to winnow out a few of the more established approaches, add in a couple of custom-built methods for IT and throw in one baby-in-the-making just right for e-business. What follows are thumbnail synopses of each approach; for more details, contact the individual practitioners, who will in an instant supply more white-paper information than any one person's desk can reasonably accommodate.

Applied information economics (AIE):

Developed by Douglas Hubbard, principal of Hubbard Ross, AIE prides itself on being more scientific than its counterparts. AIE

resources, IT, employee competency and, coming up, one for e-business) is nevertheless the methodology business people most frequently think of when someone says "valuation."

At its essence, the scorecard seeks to articulate a direct link between business strategy and financial performance by monitoring four different areas of activity. The traditional lag indicators of standard financial performance are "balanced" out by also measuring three more fluid activities: customer relationships, operational excellence, and learning and growth infrastructure, that is, the organization's ability to learn and improve.

Companies must first establish a cause and effect between financial outcome and strategy at the highest levels of the organization, says David Norton, who developed the balanced scorecard along with Robert Kaplan and is now president of the Balanced Scorecard Collaborative in Lincoln, Mass. The next step is to define and monitor the internal processes—including the technology drivers—to help you achieve those outcomes, he explains.

The IT scorecard tightens the link between business strategy and the use of technology by insisting that every IT action be answerable to the company's stated strategic goals, explains Andrew de Lannoy, principal with Renaissance Worldwide, a management consulting group in Waltham, Mass. The scorecard can help CIOs shift from a mind-set that simply supports business processes to a forward-looking, more nimble organization that articulates its activities around the centralized business strategy. "We need to leapfrog those long development cycles we see in information technology," he says. "We can't wait for applications to evolve anymore; we need to deliver things in weeks and months."

Dotcoms and other e-business companies that can't wait even that long will soon be able to tap into a balanced scorecard specifically designed for internet initiatives. Mainspring, a Cambridge, Mass., consultancy, is working

Finding a discipline that's right for your needs can be like trying to find the definitive recipe for chicken soup.

particularly if it saves you from making critical mistakes, points out Hubbard. But if you're simply signing up for valuation to placate the powers that be or to justify IT in some vague big-picture sense, it's time and money that many feel could be better spent elsewhere.

First and foremost, then, CIOs should know exactly why they're valuing a project or department, or being asked to do so, says Greg Smith, executive consultant for Compass America, a Reston, Va., consultancy that doesn't champion one method over another.

"If the CIO just does this as an exercise without having a business impetus, the numbers are just numbers," he says. At the very minimum, the CIO should be able to say exactly what he or she is trying to derive from a valuation system. Is it the cost of e-commerce? The justification for new hires? Building a defense against budget cuts? "There has to be a business driver for valuation," Smith says. "Before you begin, you need a reason to quantify, you need to understand why you're doing it."

assigns units of measure to traditional intangibles, such as customer satisfaction and strategic alignment, then applies various tools borrowed from actuarial science, portfolio theory and statistics to calculate the value of information. The approach relies on the tenets of decision theory to accommodate multiple strategies with uncertain outcomes, as is frequently the case with IT investments.

"We're familiarizing IT decision makers with methods that have already been developed to put economic value on flexibility, improved communication and infrastructure," says Hubbard, who acknowledges that AIE's range of esoteric calculations may initially be intimidating. "It's a lot of work, but actuarial science is heavy. IT investments are big, risky things, and you really ought to be willing to do the math."

Balanced scorecard: Downplayed by some as a squishy 1980s leftover, the balanced scorecard and its various permutations (there's a subset for finance, human



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with the Balanced Scorecard Collaborative and executives from 25 companies to tailor the scorecard to the needs of online initiatives. The e-strategy balanced scorecard should be available in June of this year.

Customer index: Andersen Consulting's customer index approach, initially developed for mortgage, banking and other financial sectors, urges companies to determine the true economic value of its customers by tracking revenue, cost and profit on a per-customer basis. While it's often difficult to make a direct connection between IT investments and customer retention or acquisition,

Rainer Famulla, a partner in Andersen Consulting's financial services practice in Reston, Va., says organizations can derive decision-making perspective from determining how such purchases will influence the customer base.

"If you compute your current costs and profitability on a per-customer basis, you can then ask, What will future technology investments do to those numbers?" says Famulla. This approach isn't relevant to companies with few customers—say, a global construction giant that builds one or two desalinization plants a year—but it's particularly appropriate for dotcoms like Amazon.com

where customer numbers drive every aspect of the business, Famulla says.

Economic value added (EVA): As a financial measure, EVA dictates that profit be computed simply by subtracting all costs, including the cost of capital. When managers, including IT managers, employ capital, they must "pay" for it, just as if it were a wage, explains David Glassman, partner in charge of strategic initiatives at Stern Stewart & Co. in New York City. Factoring in capital gives IT fuller credit for its contributions to the company and ensures business units economize on assets as well as on oper-



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ating and other costs.

As a mind-set—what Stern Stewart refers to as “EVA governance”—the approach advises corporations to establish IT as a value center rather than a cost center, which requires IT to market its skills internally and articulate the ways in which they add to shareholder value. Business units in turn must compensate IT at rates roughly equivalent to the external market, which allows the company to track IT revenue as well as costs. Finally, Stern Stewart strongly advises adding an incentive component to give the program some teeth. “If you link EVA measures with incentives that reinforce those measures, you’re going to get a much higher level of accountability,” says Glassman. “You see better behavior and more people thinking directly about shareholder value.”

Economic value sourced (EVS): EVS posits that there are four and only four ways IT creates value for an organization: by increasing revenue, improving productivity, decreasing cycle time and decreasing risk,

much more value lost over technology than anyone acknowledges.” EVS asks companies to calculate exactly the risk they might incur in being even one or two days late to market with a new system or, on the flip side, the benefits to be gained in removing just a day or two per month from their existing value chain.

Portfolio management: Taking a page from the red-hot stock market of the past decade, the portfolio management approach suggests that companies manage IT as they would a stock fund, with the CIO or another senior-level executive acting as a fund manager. “The organization has to be wired with the mind-set that technology is an investment that has to be worked as frequently as the financial markets,” says Howard Rubin, CEO of Rubin Systems and a Meta Group research fellow in Pound Ridge, N.Y., who promulgates the plan.

From a value-centric rather than cost-centric outlook, a company needs to manage its IT portfolio, looking at the amount,

Real option valuation (ROV): At the backbone of ROV is one key concept: flexibility for the future. Like other valuation methodologies, ROV advises companies to approach IT as if it were a portfolio of options; the difference is ROV insists on a much deeper level of granularity—or, as some call it, complexity.

“Companies are struggling to determine which [IT] investment returns value, but the techniques aren’t very useful,” says Adam Borison, a principal at PricewaterhouseCoopers’ Menlo Park, Calif., office and leader of its ROV practice. “People ask, How do I figure out some rigorous, meaningful approach that lets us know what to do or not to do?”

First taking hold in the world of mergers and acquisitions, where previously unvalued or undervalued entities must suddenly be counted, ROV is gaining adherents in technology, research and development, and e-business—all areas traditionally viewed as cost centers. “Tech investments are like options. You look at what you’re doing, you’re not quite sure how it’s going to play out, but you manage it over time to create value,” says Borison.

One way to make that right decision is to look at a much wider array of indicators and consider a wider array of outcomes or future scenarios, which ROV depicts as a “dynamic road map” of management decisions and future events. The goal is to achieve the maximum level of flexibility, which in turn allows organizations to fine-tune or alter their IT course in the shortest order. “We try to make sure we’ve correctly looked at whether there is downstream flexibility. If you can ask, What are the milestones? How can I adjust my strategy?, then you’re getting a more accurate picture of reality,” Borison says. **CIO**

Valuation can be misleading when misapplied and costly and time-consuming when applied for no reason at all.

explains Bob Cawly, developer of EVS, which is marketed as part of the Meta Group’s Business Value Framework. While EVS extends the use of such valuation tools as EVA, internal rate of return (IRR) and return on investment (ROI) to help define IT in economic terms, the methodology goes a step further by trying to express the values of time and risk and add them into the equation.

EVS advises organizations to take a risk-management approach to high-profile projects. “Most companies don’t believe the probability of the [calculated] risk will ever happen to them, says Cawly, “but there is

size, age, performance and risk of each investment. On the cost side of the equation, Rubin says, “Once you get an understanding of the size of your asset base—the people, networks and so on—you need to manage the unit costs of commodity services like processing transactions or internet sales.” On the yield side, companies should watch carefully the growth of the asset base and its performance.

Because the annual technology cycle doesn’t work for this level of attention, companies need to shorten the budget cycle and install and develop management processes that allow them to fine-tune the technology portfolio every time they spend.

What’s IT worth to you? Tell Senior Editor Megan Santosus at santosus@cio.com. Tracy Mayor is a freelance writer based in Beverly, Mass. She can be reached at tmayor@shore.net.

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Full Measure

BY TOM FIELD

Balanced scorecard, cost-benefit, simple ROI—there are any number of ways to determine whether a company is getting business value from individual IT investments. But how do you evaluate the impact that an IS organization as a whole has on the enterprise? How can CIOs, their managers and their customers (internal or external) tell if the IS department actually contributes to the bottom line or just drags it down?

It's an essential question: The effectiveness and credibility of IS in general and the CIO in particular depend on the ability to demonstrate their worth. It's the key to successfully marketing IT within the organization. But how to do it is not so clear.

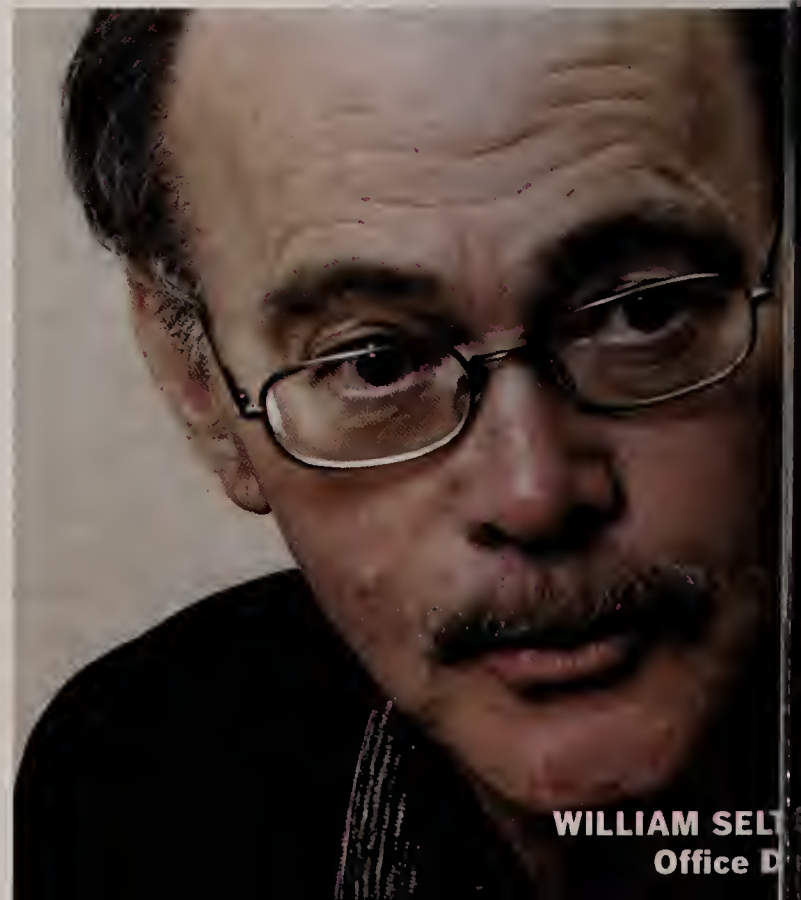
At CIO's annual Enterprise Value Retreat in Tucson, Ariz., this past January, we gathered a group of current and ex-CIOs and asked them to discuss the relative value of IS—how to see it as well as how to show it. Participants included William Crowell, vice president and CIO of publishing giant Meredith Corp.; William Hickman, vice president and CIO of Anheuser-Busch; Laraine Rodgers, former CIO of Xerox and current vice president of Emerald Solutions, an IT consultancy; William Seltzer, CIO of Office Depot; Harvey Shrednick, former CIO of Corning and current IT-business professor at Arizona State University; and Lani Spund, CIO of Electronic Arts, a computer game manufacturer.

With such a diverse group of participants, this discussion took some curious twists—particularly when the conversation turned to whether IT should be viewed as a cost cutter or a business driver.



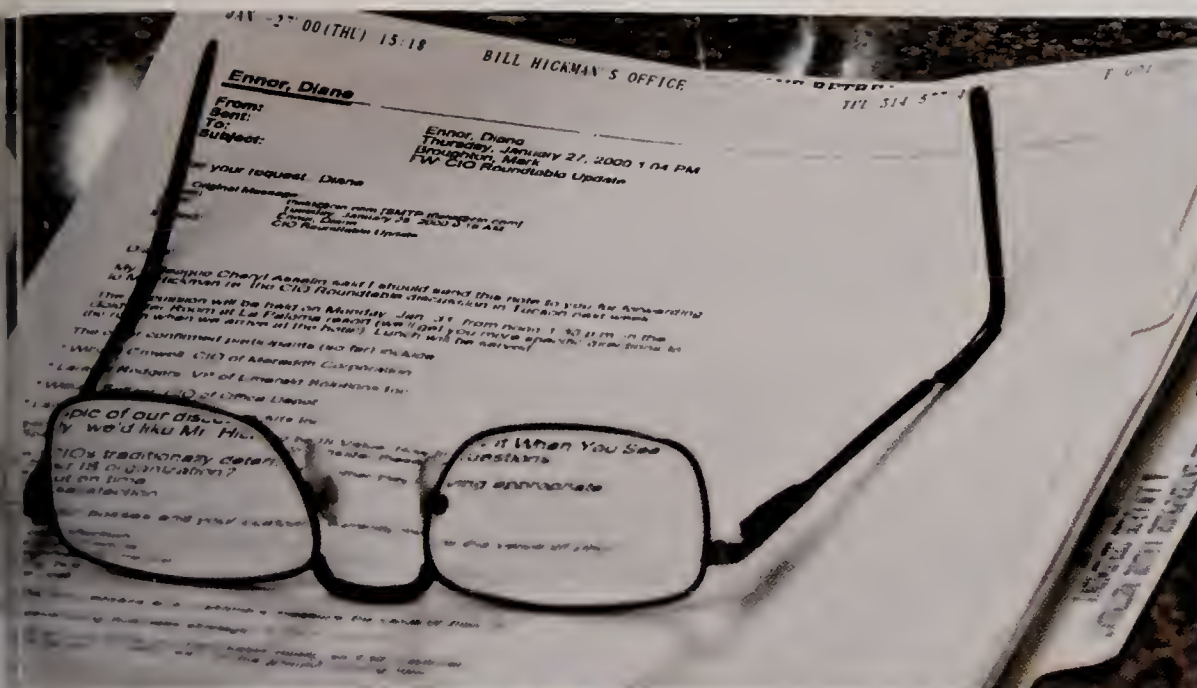
WILLIAM HICKMAN
Anheuser-Busch

IT executives discuss the big



WILLIAM SELTZER
Office Depot

PHOTOGRAPHY BY STEVE CRAFT



LANI SPUND
Electronic Arts



ture of providing value to the enterprise



LARAIN RODGERS
Emerald Solutions



WILLIAM CROWELL
Meredith Corp.



HARVEY SHREDNICK
Arizona State University

CIO: How do you define value with regard to the IS organization?

LARAIN RODGERS: Having grown up in New York City, I think, "What's it worth?" Traditionally, IS value has been looked at as what's the efficiency or the operational value. To some extent there's been some strategy in there, but basically it's the operational metrics—things like uptime, from a data center standpoint, for example.

HARVEY SHREDNICK: Value is in the eye of the beholder. I used to have a boss who measured value by what he called the "hum factor." He would listen to the hum of the organization, and if it was the right pitch, if it was exactly what he was listening for, he would give me kudos for doing an excellent job. He would ask people, "Hey, by the way, how's Harvey doing? How has Harvey been a value to you and your organization?" That 60-second answer would be, in essence, my metric for the year. I could show him all kinds of great customer satisfaction surveys, great service, Six Sigma performance, but if there was a little bit of hesitation from the person who was responding, my value would plummet.

WILLIAM SELTZER: [The definition of value] has varied over time. There was a time throughout the 1970s when there was a strong emphasis on rate of return. I think a lot of that came about when President Kennedy brought in McNamara as Secretary of Defense, and all we heard about were the "whiz kids at Ford." Every controller wanted to come out of that background, or at least act like he came out of that background, so everything was driven toward, "What's the bottom-line impact?"

And then I think we migrated to an era where people like Dick Nolan from Harvard Business School wrote his paper on the stages of data processing, and he talked about getting an ROI not of 10 percent but of 10 times the investment. And then there was a whole different focus on change and how fast you bring about change. Bottom-line ROI was something that went assumed.

Now we've reached a point where the future of so many companies apparently rides on how well they do in e-commerce; it's a blind faith almost. The value now is like the California Gold Rush—just rush in.

CIO: How are your IS organizations evaluated—and by whom?

SHREDNICK: A lot of people get excited about working on very strategic projects and how much value they have to the organization. But it's like in Maslow's hierarchy of needs: If you don't take care of the lower needs, then nobody gets to the appreciation/recognition/fulfillment levels. If response time on online systems is very, very long, or if you can't get into your voice message system, then people say, "IS is not providing that value." In other words [they're saying], "I don't really trust you, and therefore I don't believe—no matter what you show me in terms of a proposal—that you could provide value because I don't have confidence that you could really put it together." So value is relative to how well you've built the base of trust on fundamental blocking and tackling, as they say in football.

RODGERS: To build on what Harvey's saying, everything has changed. IT is everything today. Value is that your handheld computer is downloaded with the correct information, and you have your e-mail so that you can actually read it. It's your laptop working from home. We're a very mobile workforce, and the whole envelope of a company has also changed.



"It behooves the CIO to understand the infrastructure because customers don't really care that Sue in the IT department messed up, or that someone at the company you outsourced to messed up."

—Laraine Rodgers

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In a traditional organization you sort of own everything, so you have control over it, and you can feel it and touch it. This is a little bit more amorphous today because we're a network of networks. So it's really critical to understand when someone says, "This didn't work." It behooves you [as CIO] to understand that infrastructure, because [customers] don't really care that Sue in the IT department messed up, or that someone at the company you outsourced to messed up. You really need to understand the whole enterprise and understand from a transaction standpoint and a customer standpoint how to put this all together.

WILLIAM CROWELL: I think what's interesting about our profession is that we haven't created a really strong, enduring value proposition in the management community the way, say, that CFOs have [demonstrated] that they are integral to the business decision-making process and provide information and expertise in that area. If you look at marketing, they're talking branding. I think the reason it's so complicated for us is that we make these investments on an incremental basis, but they accrue over the long term, and they

require refreshment over the long term.

I've asked a lot of different consulting firms to do a study to see what any theoretical corporation would look like today if there was no information technology. How many people would you need in accounting and marketing? And I think [the notion of how IT streamlines a company] is brand value. You don't create brand in a day. Anheuser-Busch spent hundreds of years. *Better Homes and Gardens*, *Ladies' Home Journal*—these are names where you continuously invest in marketing, and you have that brand value. I think one of the things that we have to do is educate executives that there is incredible embedded value of IT in our organizations that we don't appreciate, that they don't understand.

CIO: What do you do to educate business executives in your own company?

CROWELL: I preach [brand value] all the time, but it's one voice in the choir. I think it's something as a profession that others have to get on and say, "What's our branded value? What's our long-term, enduring valuation to the corporation?" I think it's immense, but I don't know that we know how to articulate it very well.

WILLIAM HICKMAN: The one thing we haven't done is educate the clientele with respect to what's going on in the world of IT and why it's extremely important to the business. One of the issues that goes around now is [business people saying], "Hey, IT person, get out of your office and go visit the customer. Understand what's going on in the customer's life." In the past, an awful lot of the white-haired, 50-year-old males always knew what the customer needed and would go into their back rooms and do it. Today, business is so complex that we have no idea what customers really need without collaborating with them.

Another issue is that we're not very good at thinking far enough in advance to bring in the new technologies that help our customers. And when the customers decide they need something, they want it now. For me to have to put something through technology development for four or five months, that doesn't do any good, and [customers] say once again, "Hey, you IT guys, you're not up on the stuff."

LANI SPUND: I have a good anecdote about a cartoon I saw that [illustrates the] juxtaposition between the part of the company that generates revenue and the



"We happen to be a marketing company that sells beer. Analysts are looking at us to be a software company that sells beer and just destroys the competition."

—William Hickman

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other part of the company that generates product and how IT is perceived by both. The cartoon was a dog being fed. He sees a person—in this case IT—come in, and the dog thinks, “Look at this. She feeds me. She pets me. She takes good care of me. I have shelter. I have food. She must be a god.” And that’s how our distribution channels think of IT.

Now let’s talk about how [the rest of the company] thinks of IT, and how a cat, on the other hand, sees the same thing. The cat is saying, “Look at this. She feeds me. She takes care of me. I have shelter. Every whim that I could desire is here. I must be a god.” So our [game producers] think of us as the servants, and our distribution channel thinks of us as the fundamental drivers who enable the business, and those are the two [constituencies] that we have to keep in mind.

CIO: How should IS be valued going forward?

SELTZER: I think one of the ways I would value IS is something we really haven’t gotten into enough, and that is the possibilities of IS. In other words, a lot of the marketing of IS has been in the capabilities. You continually tell your customers

about what you can do, all these great capabilities. But in many cases, they really don’t know what the [unrealized] possibilities are. And the value of IT can really be enhanced if the IS person understands the business, understands the ability to partner with other people, and can take the capabilities and package them in a way that customers can really understand how they could actually use those capabilities to the nth degree. [Consider] the internet: You’re just bandying it around as this great tool, as opposed to considering the possibilities of using this tool to add value to the business.

CROWELL: I don’t think we know how to value IT. I think as CIOs, we worry about it too much. I mean, I’ve never heard the CFO or the head of PR or the head of legal wonder, “What’s the value of the law department?” I do believe that there’s only one fundamental value of IT, and that is it takes cost out of a business process. Even the internet, to me, does nothing more than say, “I can communicate globally with my customer, I know I’m one-to-one, and the cost [is nearly] zero.” If that weren’t true, we wouldn’t care [about the internet].

RODGERS: I think IT also must drive revenue.

CROWELL: Well, I think it does because it reduces costs.

RODGERS: But would you consider suggesting a new idea to be reducing cost?

CROWELL: I’m an economist, and I can’t think of one order that has been generated simply by a computer. It’s a facilitator, and it generally lowers the cost of doing business, and that expands the market. Yes, you can say that we’ve expanded the market and we’re generating more revenue through e-commerce. But e-commerce is the facilitator, and it has lowered the transactional costs to such extents that you broaden the market. We’re now global, and we couldn’t deliver *Better Homes* or *Successful Farming* to a global marketplace [without technology]. The cost of doing that in a physical medium would be \$15 an issue, and we wouldn’t sell enough to make it profitable. But on the internet, bang! We’re 20 percent global instantaneously.

SELTZER: I agree that at one time it really was an emphasis to take cost out of the

“Our game producers think of IS as the servants, and our distribution channel thinks of IS as the fundamental drivers who enable the business.”

—Lani Spund





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business. But let's say we run a retail store today, and you have a value card. When the customer comes in and shops, she gives you the value card and earns points, and for getting points, she gets things back. Let's say we can get that customer to come into the store, and you scan the card when the customer enters the store. When that happens, the beeper from the operations manager sounds, and the operations manager says, "Mrs. Jones is in the store, and she's my sixth-best customer in terms of the gross margin that she generates." There are all sorts of things in terms of customer service where we can use technology to enhance the shopping experience, make the customer feel better, get loyalty and drive revenue. I don't think we're using technology to its fullest until we're doing that.

CROWELL: You could have done all that without technology. But it would not have been cost-effective. That's my point: Technology makes it cost-effective.

HICKMAN: I work with the investment community a lot, and I think using technology to take cost out of the system is a given. That gets you to Wall Street,

for them to want to play with you. But the question that they will ask today—since technology is so important—is, "How are you using technology to grow the business, to be competitive with Corona, Heineken, Miller and Coors?" The last time I [met with Wall Street analysts], the stock went up \$6 because I talked about [our new extranet] Budnet. [Analysts] all know that IT is about reducing costs, and you can never lose sight of that, but they want to see a balance. We happen to be a marketing company that sells beer. They're looking at us to be a software company that sells beer and just destroys the competition.

SPUND: I have 50 initiatives going on concurrently. Here's a good example of one: It costs \$4 million to put in a new piece of infrastructure. That capability that we put in will allow our games to be built faster, our folks to communicate better and so forth. Now when I go to get funding for that, the question I'm faced with is, "Lani, if I spend \$4 million creating a new game, we can make \$100 million in revenues from that game. Should I spend the \$4 million to get \$100 million of revenues, or should I give you \$4 million to create

better capability? Show me the money." Basically, I can't show them the money because I can't prove it. I can't use industry statistics because they either aren't there, or they're suspect.

So the way I've justified these investments is I looked at these three things: What does it add to the promise—that is, what gets money on the table right now in terms of stock value? What real capability does it put in as far as the ability to go quicker than the competition and/or avoid potential embarrassing costs, like protecting intellectual capital? And the third is cost reduction. When I add all three together, all of a sudden my \$4 million proposal starts to look reasonable.

CROWELL: I think I can take every example you all have gone through and show you that if you really analyze it, what you've done is made the process less costly. And if that wasn't true, then I'd optimize the business by eliminating marketing and sales and say, "We don't need revenue-producing people; we've got technology." **CIO**

How do you and your constituents measure the value of your IS organization? Tell Senior Editor Tom Field at tfield@cio.com.



"I do believe that there's only one fundamental value of IT, and that is it takes cost out of a business process."

—William Crowell

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Al Grasso, vice president and CIO

"Our most important gain can't be easily measured—the quality and innovation in our solutions."

An Audit Tale

In a post-implementation audit of its intranet, Mitre Corp. focused on the benefits of knowledge sharing and collaboration

BY DEBBY YOUNG

Mitre Corp., an independent, not-for-profit company, provides federal agencies with system engineering and information technology expertise. Founded in 1958, the Bedford, Mass.-based company's more than 4,000 employees support four primary customers: the Department of Defense, the Federal Aviation Administration, the U.S. intelligence community and the Internal Revenue Service.

In June 1994, Mitre began work on a corporate intranet with the goal of transforming the company from a culture that fostered intellectual fiefdoms and internal rivalry to one with an accessible corporate knowledge base and intellectual collaboration. As a provider of intellectual capital to government agencies, company executives felt that collaboration was imperative to Mitre's long-term success. In May 1995, the corporation debuted its Mitre Information Infrastructure (MII) companywide. Three years later, in an effort to make sure that its goals were being achieved, Mitre began a post-implementation audit of the evolu-

Value Methodology

Since 1998, **Mitre Corp.** has been conducting a formal post-implementation audit of its Mitre Information Infrastructure (MII) to determine its ongoing value to employees and customers. The company's primary methodology for assessing the value of this technology is based on the Norton/Kaplan balanced scorecard concept of financial measures weighed against customer satisfaction, internal business processes and an organization's innovation and learning activities. (See "Score It a Hit," *CIO Enterprise*, Nov. 15, 1998, for more on the balanced scorecard approach.) As part of this process, Mitre examined both tangible and intangible benefits, including reductions in operating costs, cost avoidance, improvements in strategic business processes and staff productivity, accessible volume of intellectual capital and the level of collaboration fostered by the technology.

ing MII system to capture both its tangible and intangible benefits. (Mitre won a *CIO* Enterprise Value Award for the system. For more on the MII, see "Common Knowledge," *CIO*, Feb. 1, 1999.)

To date, Mitre has invested \$7.2 million in the MII, netting an ROI of \$62.1 million in reduced operating costs and improved productivity. But financial impact represents only part of the story. According to Al Grasso, vice president and CIO, "Our most important gain can't be as easily measured—the quality and innovation in our solutions that become realizable when you have all this information at your fingertips."

In order to gain a complete picture of the system, Mitre conducted an analysis not only of the hard financial benefits but also of the soft benefits the system provided—specifically, how the MII helps employees collaborate more effectively. "To deliver technical excellence, it's essential for us to share information. It's how we bring all our resources together to solve problems for sponsors," explains Mark Maybury, director of artificial intelligence and executive director of the IT division for Mitre. "Our high-level objective with the MII is to make it easier for people to give information to others and to use information from others to solve the next problem that comes along."

The Hard Benefits

1. Reduced Operating Costs

Government restrictions forbid Mitre from increasing its workload or even making a profit. As a result, Mitre's perspective on ROI is more qualitative than quantitative. "We have a fixed number of dollars and staff we can deliver because of our unique role as a group of federally funded research centers," explains Maybury. "Therefore, we need to make people more efficient or save on other indirect costs so that we have more staff to deploy to government projects."

Assessing reductions in operating costs was fairly straightforward. One of the key measurements Mitre sought to capture was whether the MII enabled the company to apply fewer people more effectively to a task.

CRITICAL ANALYSIS BY DOUGLAS HUBBARD

Everything Is Measurable

It sounds like MII was a great investment for Mitre. Even the hard benefits alone make MII a clear winner. But this is a commentary on the company's post-implementation audit, not MII itself, so here are some kudos and some recommendations.

Kudos

Mitre spends the right amount of effort on the audit—more than most would have spent. Companies should endeavor to pay as much attention to measurement as Mitre.

Mitre also makes good use of existing records and random surveys to make measurements. Not all IT departments would have thought of cross-referencing call logs and other records as a measurement method. Some may have labeled "increased query sophistication" as an intangible. Remember, the label of "intangible" always means the labeler just doesn't know how to measure it.

Recommendations

Mitre could also have avoided considering the "quality and innovation in its solutions" as an intangible. If MII really improves the quality of deliverables, then it should affect customer perceptions and ultimately revenue. Simply ask a random sample of customers to rank the quality of some pre-MII and post-MII deliverables (make sure they don't know which is which) and if improved quality has recently caused them to purchase more services from Mitre.

Regarding labor savings, many CFOs are skeptical that tiny productivity improvements can add up to big savings, and rightly so. If the time saved simply results in longer lunches, then the value may be nearly zero. We compute a "marginal economic value of labor reduction," and it generally gives a more realistic value—usually lower—than the traditional "time savings multiplied by salaries" formula.

Finally, I can't repeat too often the need for businesses to learn how to use probability distributions in IT ROI calculations. Were staff productivity improvements worth exactly \$12.8 million? Probably not, but perhaps there is a 90 percent probability that the true value is between \$6 million and \$18 million. Reporting all values in this way forms the basis of a risk-return analysis and is much more credible. (See "The IT Measurement Inversion," *CIO Enterprise*, April 15, 1999, for more information about using distributions.)

The Bottom Line

Regardless of how Mitre could have done the post-audit differently, the really important issue is what Mitre chooses to do with these findings. If the net result of this cost-benefit analysis was only a collective pat on the back, then it was a waste of time. The value of this information comes from how Mitre uses it in future decisions.



Douglas Hubbard is founding partner of Hubbard Ross in Glen Ellyn, Ill. Hubbard Ross uses the scientific and mathematical principles of applied information economics to systematically analyze the economic value of any IT investment. Hubbard is a former IT manager and has more than 10 years' experience in IT management consulting. He can be reached via e-mail at dhubbard@hubbardross.com.

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*"The objective is to get people to share—to give information to others and to use information from others," says **Mark Maybury**, director of artificial intelligence and executive director of the IT division.*

The Innovation Team, a panel of IT directors responsible for managing Mitre's IT resources, decided to track efficiencies along operating cost centers. Within each of those cost centers, Mitre examined the impact of moving a number of tasks toward self-service on the MII. For example, with employees able to log on to the MII and update their own human resources records or research routine questions, fewer HR staff were required to support benefits administration. Call logs also indi-

cate that the HR staff now typically handles more sophisticated queries.

In all, the MII has enabled Mitre to save \$16.6 million in labor and material costs since 1996. The savings are allocated as follows: human resources and administration (\$5.6 million), information systems management (\$2.9 million), financial operations (\$3.6 million), technical operations (\$2 million) and miscellaneous other services (\$2.6 million).

2. Improved Staff Productivity

To validate the notion that shifting many mundane activities to the MII would make people more efficient, Mitre focused measurements on three tasks that affect all employees: document management, daily time card submission and purchasing. In the area of document management, the Innovation Team focused primarily on how the MII expedited the dissemination of documents to employees and sponsors. In the past, em-



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employees spent tens of minutes a day laboriously converting documents for publication. Today the MII automatically translates PowerPoint presentations, spreadsheets and documents into HTML, and indexes and publishes them so that they're immediately available companywide. Through surveys and observation, the Innovation Team determined that the technology was saving employees at least five minutes a day that they could devote to other tasks.

By comparing the time spent filling out physical time cards each day with the time it took to submit that data over the MII, the Innovation Team determined that employees saved at least a minute a day with electronic submission. And using a purchasing card online and tracking the status of one's purchases over the MII, instead of relying on a central purchasing organization, saved the average employee at least two minutes a day. The Innovation Team also factored in improvements in help desk operations and job pricing activity due to the ready availability of key information through the MII. According to time logs, help desk staff saved an average of eight minutes per call; job pricers saved an average of one hour per job. By multiplying these aggregate time savings by the salaries of a conservative three-quarters of the Mitre population (\$436,800 per minute), Mitre estimated widespread use of the MII was saving \$12.8 million in improved staff productivity.

In the case of the help desk, the Innovation Team also based its estimates on the number of calls handled and the average staff salary—which comes to 56 cents a minute. The value attributed to time saved in performing job pricing was based on 600 jobs priced quarterly and the average salary of staff covering that function (\$70,000).

3. Cost Avoidance

Mitre spends tremendous energy and expense complying with federal regulations regarding property management, purchasing and time card submission. In the past, Mitre had had three months' worth of revenue (\$22 million) withheld by sponsoring agencies because of noncompliance. Since it began capturing data

Valuation Flow Chart

Mitre's post-implementation audit

Measure tangible financial savings:

Labor and materials

Measure indirect returns: Improved productivity and cost avoidance

Measure increases in intellectual capital:

Number of online knowledge base collections, number of detailed employee résumés with pointers to specific expertise

Measure increases in collaboration:

Frequency of access to individual databases and internal websites, number of transfer folders in use and content volume, feedback through employee and customer satisfaction surveys

on the MII, Mitre has been able to satisfy its contractual record-keeping obligations without any noncompliance penalties.

The Innovation Team also demonstrated that the vast repositories of data housed on the MII would enable the company to realize indirect savings by making it easier and faster to comply with federal regulations. For instance, before the MII, Mitre had an entire department dedicated to tracking computers and peripheral property associated with the dozens of contracts with the Army, Air Force, Navy and other government agencies. The company assigned 600 clerks a year to manually conduct a government-mandated, twice-a-year audit of all the equipment. Now with the MII, every piece of property Mitre purchases is bar-coded and logged into an MII database. Individual employees can log on to the MII and track the status of property they have signed out to them. Government auditors scan the database directly to satisfy their reporting needs. The Innovation Team calculated that using the automating property tracking in lieu of a biannual physical equipment audit saves Mitre \$860,000 a year in clerical staff overhead (600 clerks across the company at \$9 per hour, wholly dedicated to the auditing process for four weeks a year).

Avoiding costly turnover is another bene-

fit the Innovation Team attributes to the MII. Because the MII facilitates collaboration across geographies, Mitre can leverage the talents of staffers who want to work out of their homes instead of hiring new staff to be onsite. Currently it costs Mitre about \$20,000 to process a new employee. The Innovation Team calculated that the MII enabled the company to retain 15 teleworkers, saving Mitre about \$300,000 in potential new-hire costs in 1998. According to Maybury, though IT turnover is around 14.5 percent nationwide, Mitre's turnover rate is significantly less—around 8 percent to 9 percent. He feels part of the credit is due to the MII's ability to help employees do their job more efficiently. He maintains that the MII lowers job frustration, increases productivity and improves the work environment.

The Soft Benefits

1. Increasing the Knowledge Base

Before the MII, knowledge was a closely guarded commodity within each of Mitre's three independent business units. Today employees are able to talk knowledgeably about Mitre projects in which they haven't even participated. To document this shift in culture, the Innovation Team has measured not only the growing volume of contributions to the MII knowledge base but also who has accessed those repositories of information. Every employee is provided with three centrally managed folders: transfer folders for temporary exchange of information, document folders for published knowledge (automatically converted to HTML, moved to a corporate archive and full-text indexed), and homepage and résumé folders for individual profiles. These folders are stored in a distributed file system and serve as the backbone for the corporate knowledge base. By analyzing web logs (time-stamped URLs that identify user navigation patterns and the volume of content accessed on any site) and folder usage, the Innovation Team determined that 35 percent of all Mitre staff publish technical information daily on the MII, and approximately 60 percent retrieve technical information several times a day. Cor-

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to know
who had
what,
really
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sure
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poration information collections numbered less than 100 in 1995. Today users can access over 300 centrally managed collections.

2. Sharing Expertise

The Innovation Team also uses web logs and transfer folders to measure the growing impact of the MII on collaborative teaming throughout the Mitre organization. The company tracks how frequently employees log on to the online employee directory and individual homepages, as well as how often they access document folders and transfer folders to acquire essential information on customer programs, relevant publications and key contacts.

Web logs and transfer folders indicate that 50 percent of Mitre's technical project community use the MII as a collaborative development environment several times a day. A survey of all Mitre employees indicates that 91 percent of the respondents felt that the MII had a positive effect on their productivity because it enabled them to find quality information or expertise when needed. Sixty-one percent responded that they could find what they needed faster than ever before. In 1995, web logs showed that the MII averaged 438,000 requests per month. Today the average number of requests per month over the MII exceeds 8 million. According to Grasso, the high traffic reflects an increase in both the depth and breadth of use. He says the user statistics demonstrate that the MII has become an integral part of an employee's workday, moving beyond routine administrative functions, such as time card submission, to taking advantage of the system's powerful research tools and information services.

The MII also captures a number of statistics that measure project, department and division collaboration. The financial database allows management to look at what time cards are being charged to which projects. Managers can use that data to generate graphs that show how many employees are working on projects within their organizations, outside their organizations, even outside their operating centers.

Corporatewide, transfer folders are the benchmark for how much collaboration is occurring. The Innovation Team makes inferences by measuring how much information is being put into folders and how much information people are pulling from those folders. Just in the past year, though staffing has remained constant, the number of employees using transfer folders to share project information has grown from 2,000 to 3,000. Additionally, the content of the transfer folders has increased 10 percent every month for the past year. At this point, these transfer folders contain 60,000

Today employees are able to talk knowledgeably about Mitre projects in which they haven't even participated.

documents (over 20GB of information). The Innovation Team also uses the various web logs to determine the average utilization rate of transfer folders throughout the company and to set corporatewide goals. Currently, usage hovers around 30 percent to 40 percent. The goal is to achieve 50 percent or 60 percent across the company. "Not everybody has something that needs to be published all the time," says Maybury. "But we do want to measure how frequently publishing is occurring. The objective is to get people to share—to give information to others and to use information from others."

To measure how widespread knowledge sharing is within Mitre, the Innovation Team also tracks who is accessing information to document when individual collections are being retrieved by anyone outside the originator's department. Executives feel this is an important measurement because it demonstrates the value of cross-project collaboration. A telling example comes from Judith Clapp, assistant to the director of information technologies in the Center for Air Force C2 Systems at Mitre. As the task

leader on a U.S. Air Force project, she used the MII to research technology programs germane to her project. She found a relevant briefing published by a staff member in Mitre's Reston, Va., facility. When contacted, the author contributed additional information and made other contacts that significantly changed the work. "The job was completed in half the time allocated and, more important, it resulted in a better product," Clapp says.

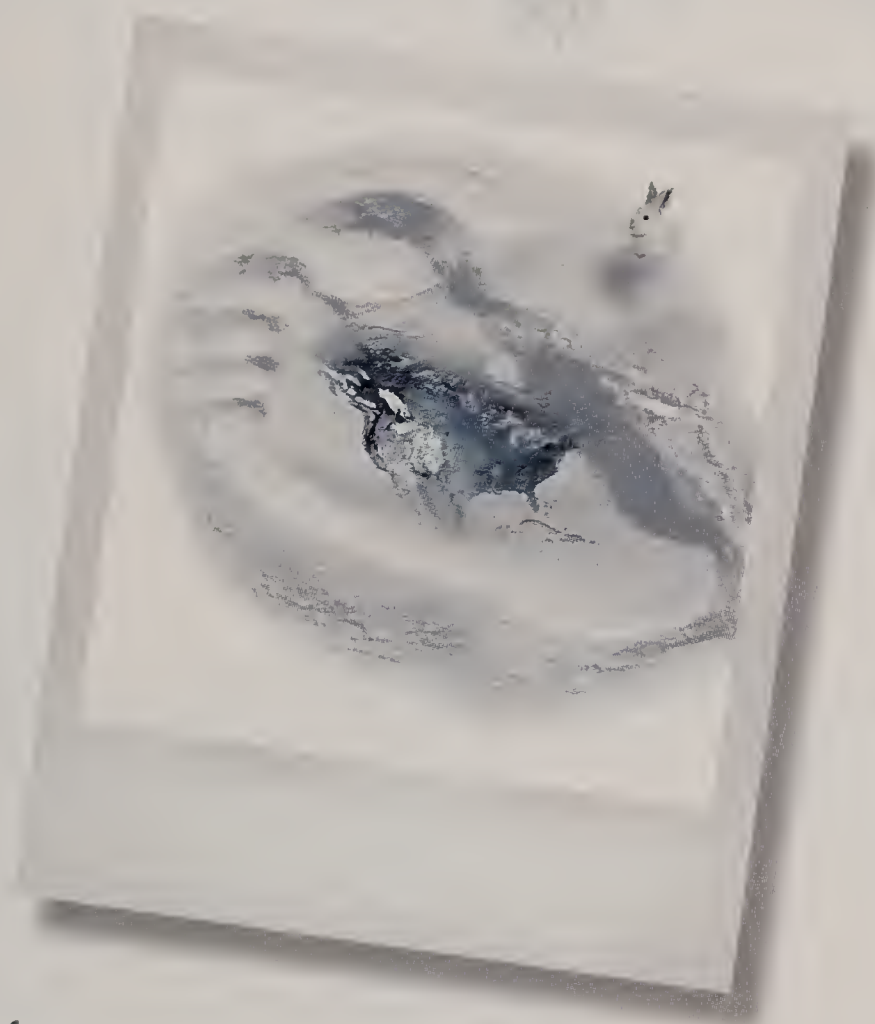
According to Maybury, the MII's knowledge repositories are filled with these types of lessons learned. And the benefits continue

to mount. Through transfer folder statistics and web log analysis, every month the Innovation Team is able to infer an increasing number of explicit collaborators throughout the Mitre organization.

Conclusion

The value of ready access to intellectual capital was the prime motivator in establishing the MII. With the post-implementation audit, Mitre monitors how well the company is meeting its goals of increasing the knowledge base and fostering cross-organization collaboration. Employee and customer surveys as well as system utilization measurements indicate that the MII is continually expanding Mitre's ability to exploit its growing corporate knowledge base and provide federal agencies with ever more comprehensive system engineering and information technology expertise. **CIO**

Have a value methodology you'd like to share and have analyzed? To participate, contact us at casefiles@cio.com. Debby Young is the owner of d'scribe, a freelance writing business based in Framingham, Mass. She can be reached at dscribe@erols.com.



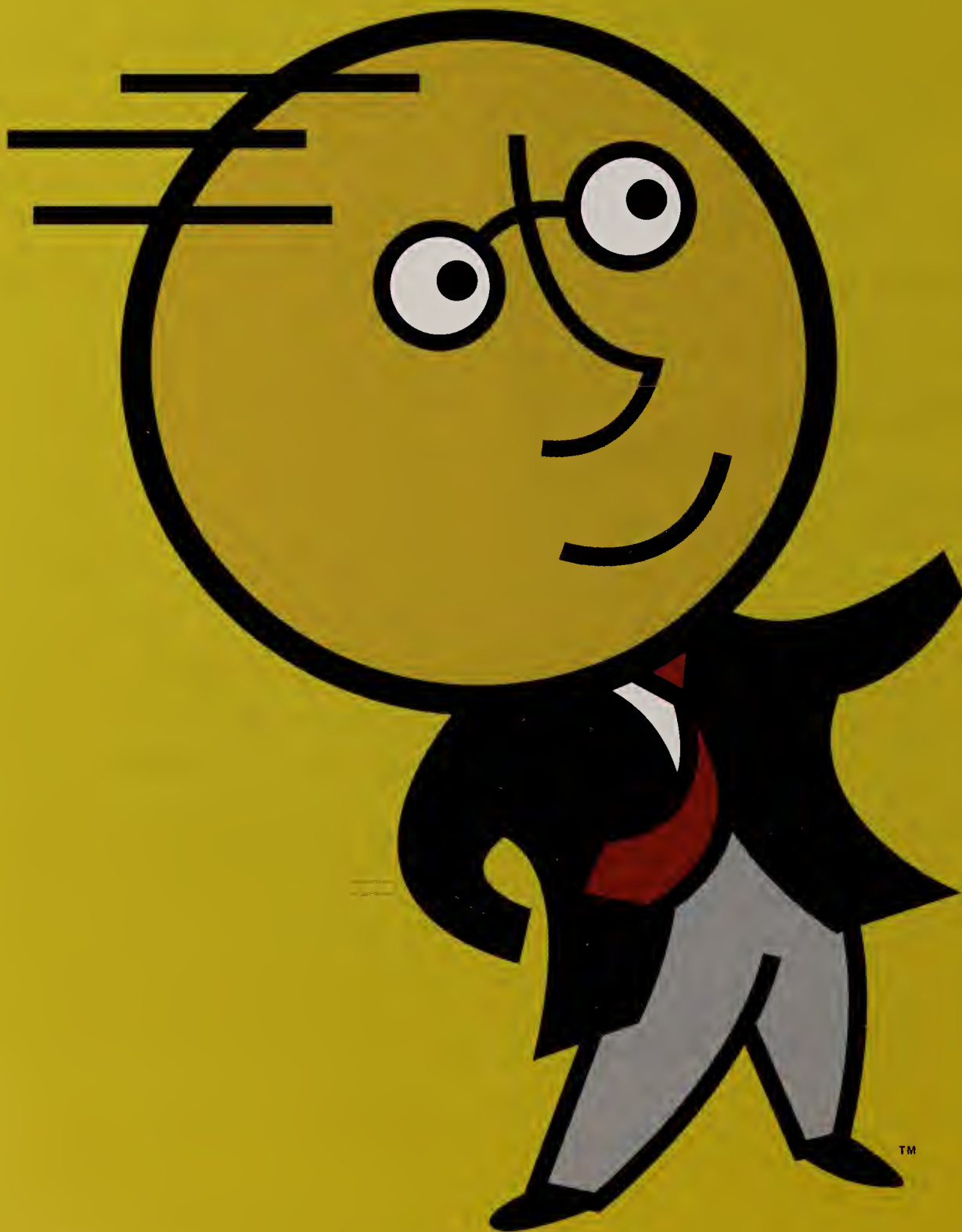
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Book Value

Experts offer their favorite books on value

BY MEGAN SANTOSUS

For CIOs beleaguered by ever-shorter project cycles and never-ending deadlines, reading books about IT value may understandably fall by the wayside. After all, with speed as the new mantra emanating from the corner office, many CIOs figure they don't have the time to read much of anything (except *CIO*, of course) let alone books about an arcane and often slippery topic such as IT value. Yet when asked by *CIO* to recommend a reading list, consultants who make their living thinking a lot about IT value didn't hesitate to mention their favorites.

Ruben Melendez, CEO of Glomark, a Columbus, Ohio-based company that has developed its own version of an economic value methodology, suggests CIOs pick up a copy of **The Balanced Scorecard: Translating Strategy into Action** (Harvard Business School Press, 1996), by Robert S. Kaplan and David P. Norton, the fathers of the balanced scorecard approach. Melendez likes the book because it includes a discussion of traditional financial-evaluation methods (such as economic value added and return on capital) in the context of adding value through customer service, innovation, business processes, employee satisfaction and other important benchmarks.



While Melendez finds it useful to know about the traditional financial measures that are detailed in *The Balanced Scorecard*, at the end of the day they just tackle the tangibles. For help putting a value on the intangibles, Melendez recommends *Intellectual Capital* (Thomson Learning, 1998), by Annie Brooking. (Not to be confused with Thomas A. Stewart's book, *Intellectual Capital: The New Wealth of Organizations*.) As the title implies, Brooking's book attempts to decipher the value of knowledge assets including such things as patents, brands and employee skills. Brooking not only explains why knowledge assets are so important, she also provides guidelines for how to measure their value.

As services director of Stamford, Conn.-based GartnerGroup's return on IT investment service, Jeff Owen is well versed in the various financial models for determining the economic value of IT. To better understand the potential value of IT, Owen suggests *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology* (Harvard Business School Press, 1998), by Peter Weill and Marianne Broadbent. Through case studies, the authors demonstrate how IT investments lead to market dominance. Along the way, the authors posit that IT investments should be thought of as a portfolio of assets and managed accordingly.

For insomniacs, Owen finds a couple of Paul A. Strassmann's hefty tomes useful. Top on his list is the 548-page *The Business Value of Computers* and the 426-page *The Squandered Computer: Evaluating the Business Alignment of In-*

formation Technology (both published by Information Economics Press, 1990 and 1997, respectively.)

To get up to speed with value methods that stray from straightforward cost-benefit analyses, Owen recommends *The Information Paradox: Realizing the Business Benefits of Information Technology* (McGraw-Hill, 1999), by John Thorp. Owen likes this book because it prods readers to link IT investments with business results. Another book that encourages readers to think in new ways (specifically in terms of speed) is *Business @ the Speed of Thought: Using a Digital Nervous System* (Warner Books, 1999), by Microsoft Chairman Bill Gates. "It doesn't give readers any [value] methodologies," Owen says. "But it does provide good background about the dynamics of business today."

Heavy Reading

As IT pervades the corporation, valuation methodologies and perspectives have shifted accordingly to incorporate more mainstream business measures. Yet Michael C. Mah, managing partner with QSM Associates, a software development consulting company in Pittsfield, Mass., and editor of Cutter Information's *IT Metrics Strategies* newsletter, believes CIOs still need to be well versed in traditional IT value metrics that focus on software and project management. Mah's suggested reading list—along with his comments—follow.

Practical Software Metrics for Project Management and Process Improvement

By Robert B. Grady (Prentice Hall, 1992)

"Excellent guidance from a practitioner on obtaining performance measures for an organization."

Software Engineering: A Practitioner's Approach

By Roger S. Pressman (Fourth Edition, McGraw-Hill, 1996)

"More like [Grady's book] with good advice on several management dimensions."

Measures for Excellence: Reliable Software on Time, Within Budget

By Lawrence H. Putnam and Ware Myers (Prentice Hall/Yourdon Press, 1992)

"One of the original works on industry benchmarks and reference trends for IT benchmarking."





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For CIOs concerned with proving the value of legacy systems such as data warehouses, Bradley Geddes, general manager of Decisionism's e-business performance management in Boulder, Colo., recommends *Corporate Information Factory* (John Wiley & Sons, 1997), by W.H. Inmon, Claudia Imhoff and Ryan Sousa. Geddes likes the book for its holistic approach to looking at IT architecture; the authors examine legacy systems in context with the internet and focus on the benefits of systems integration.

With 15 years' experience in management

consulting, David Sutton has read his share of books on IT value. Currently vice president of the strategic services group at Inforte in Atlanta, Sutton has a handful of books that stand out as particularly useful and informative. Top on his list is *EVA: The Real Key to Creating Wealth* (John Wiley & Sons, 1998), by Al Ehrbar. This book describes in detail the economic value-added method of gauging corporate performance as developed by Stern Stewart & Co., the New York City-based consulting company.

Sutton sees an interesting trend emerging in the area of IT's contribution to the business. "Companies are valued based on their IT investments," he says. "For example, when eBay crashed, its stock was crushed. A lot of analysts then looked at Amazon.com's infrastructure and gave that company high values based on it." To get up to speed with this new per-

spective, Sutton recommends *E-Business: Roadmap for Success* (Addison-Wesley, 1999), by Ravi Kalakota and Marcia Robinson. This book defines e-business as a comprehensive process and explores how managers can work out an overarching strategy.

Another selection that covers the brave new world of business is *The Innovator's Dilemma* (Harvard Business School Press, 1997), by Clayton M. Christensen. "The message of the book," says Sutton, "is eat or be eaten." So all those companies holding back on e-business because they don't want to cannibalize their existing revenue streams are doing themselves more harm in the long term.

The books recommended in this list have an appeal that goes beyond the IT department. If you're a CIO who just can't make time for reading, pick up a copy of any of these books for your CEO. **CIO**

Have you read any good business books lately? Let Senior Editor Megan Santosus know at santosus@cio.com.





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Student Aid

Why J.D. Edwards bypassed today's big-league consultants for tomorrow's superstars

BY POLLY SCHNEIDER

it's not hard to imagine an ambitious thirtysomething engineer with an eye on the lucrative IT consulting market. It's not even hard to imagine him squeezing in the extra time to work at consulting while getting an advanced degree. What is surprising is finding any company that would let him do it.

Edwin Moldauer did find such a company. He spent 1999 working on a complex financial systems project at J.D. Edwards, a major Denver software company. While still in school, he focused his energies on the job: 20 hours a week, for pay, setting up a new IT cost-allocation system for the enterprise software developer. He enjoyed the interaction with his client, was challenged by the work and got a taste of what it's like to be a consultant in a large company.

He and his fellow teammates had the same experience, and despite a few bumps along the way, they got the job done—for about half of what a consultancy would have charged. Moldauer emphasizes that this project was not just some hand-holding student experience; it was a real job with real pay and real responsibilities. “A company wants results, not a learning environment,” he says. And for J.D. Edwards, a student-staffed team that could deliver was just the creative fix the company needed in today's resource-starved IT environment.

Learn

- ▶ How universities provide an alternative to traditional consultancies
- ▶ Pitfalls to avoid with university-staffed projects
- ▶ Why a Colorado CIO group is a model for academic partnerships

PHOTO BY GEOFFREY WHEELER



The Real World: Edwin Moldauer (left) and Stepan Tonakanyan learned what it was like to work as consultants on an accounting project for J.D. Edwards.



Ground Breaker: J.D. Edwards' CIO Mark Endry brought in students to apply activity-based costing to his IT department's accounting schema.

It all began with too much growth too soon. From 1996 to 1998, J.D. Edwards had doubled in size, and Senior Vice President and CIO Mark Endry worried that the IT department's unscientific and unfair manner of calculating chargebacks would catch up to him. Historically, charges for services were divided equally among business units,

regardless of how much each unit used. In some cases, business units were paying for services they rarely if ever used. The vision of general managers storming into Endry's office with reports in hand demanding an explanation was not something he savored. What he hoped for was a new accounting system that would use the activity-based

costing (ABC) methodology, which assigns costs to a product or service based on the amount of labor and equipment needed to provide that product or service.

A student-staffed team that could deliver was just the creative fix J.D. Edwards needed in today's resource-starved IT environment.



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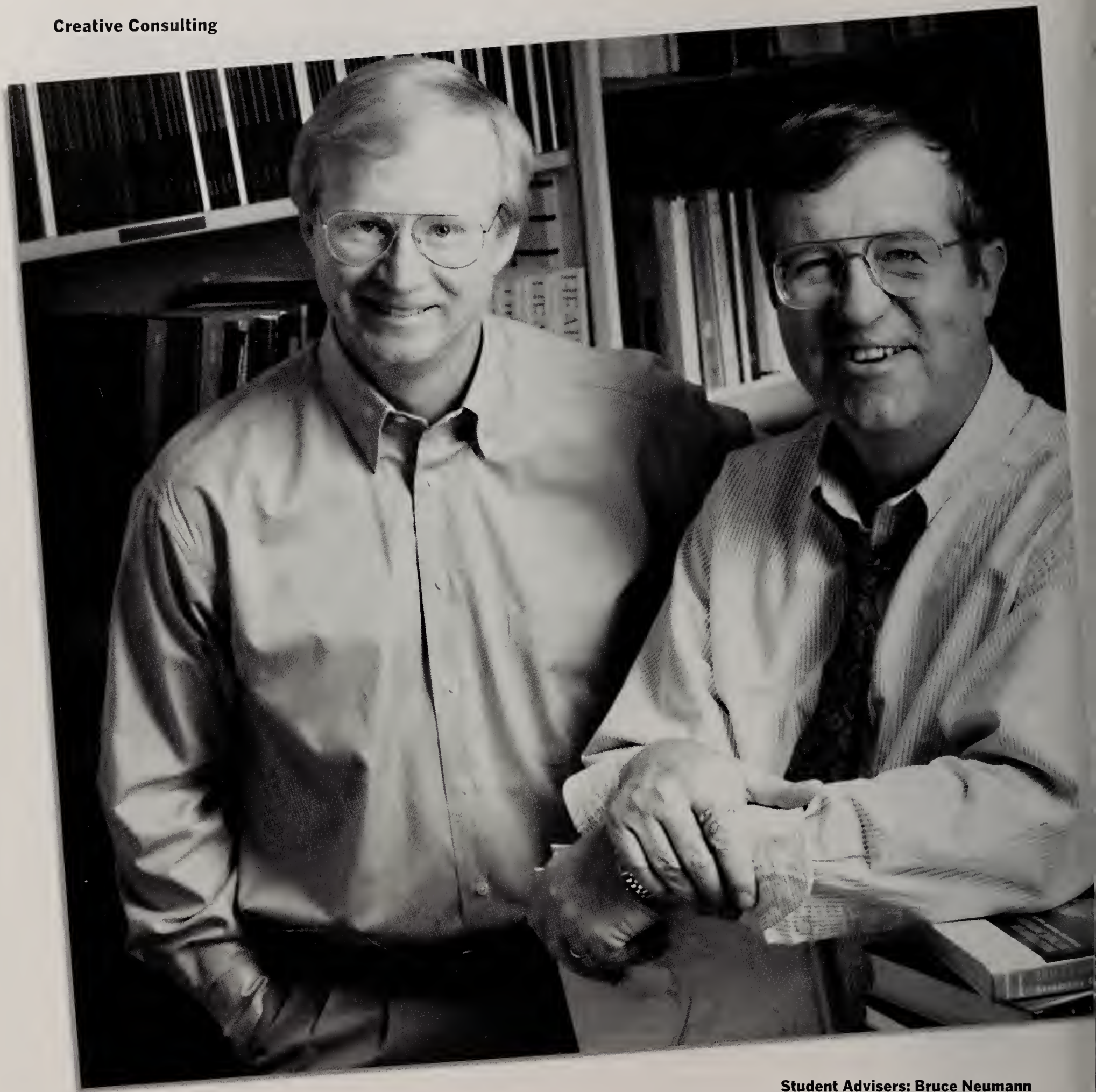
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Strapped for staff, Endry called one of his long-standing consulting partners to deliver a proposal for the system that would solve his accounting woes and win him new respect with the business side. At about the same time, Yash Gupta, then dean of the Graduate School of Business and Administration at the University of Colorado at Denver (UCD),

paid Endry a visit to discuss a new organization he was forming for CIOs and faculty members. The group would help CIOs exchange ideas and solve common problems like staffing, and Gupta wanted Endry's support (for more information on the Center for IT Innovation, see "Group Efforts," Page 174).

Student Advisers: Bruce Neumann (left) and **Jim Gerlach**, professors at the University of Colorado, played a mentoring role to the students on the project.

During that meeting, Endry casually mentioned his accounting project, and Gupta, an opportunity-seeker and networker, pitched the business school as a partner on the spot.

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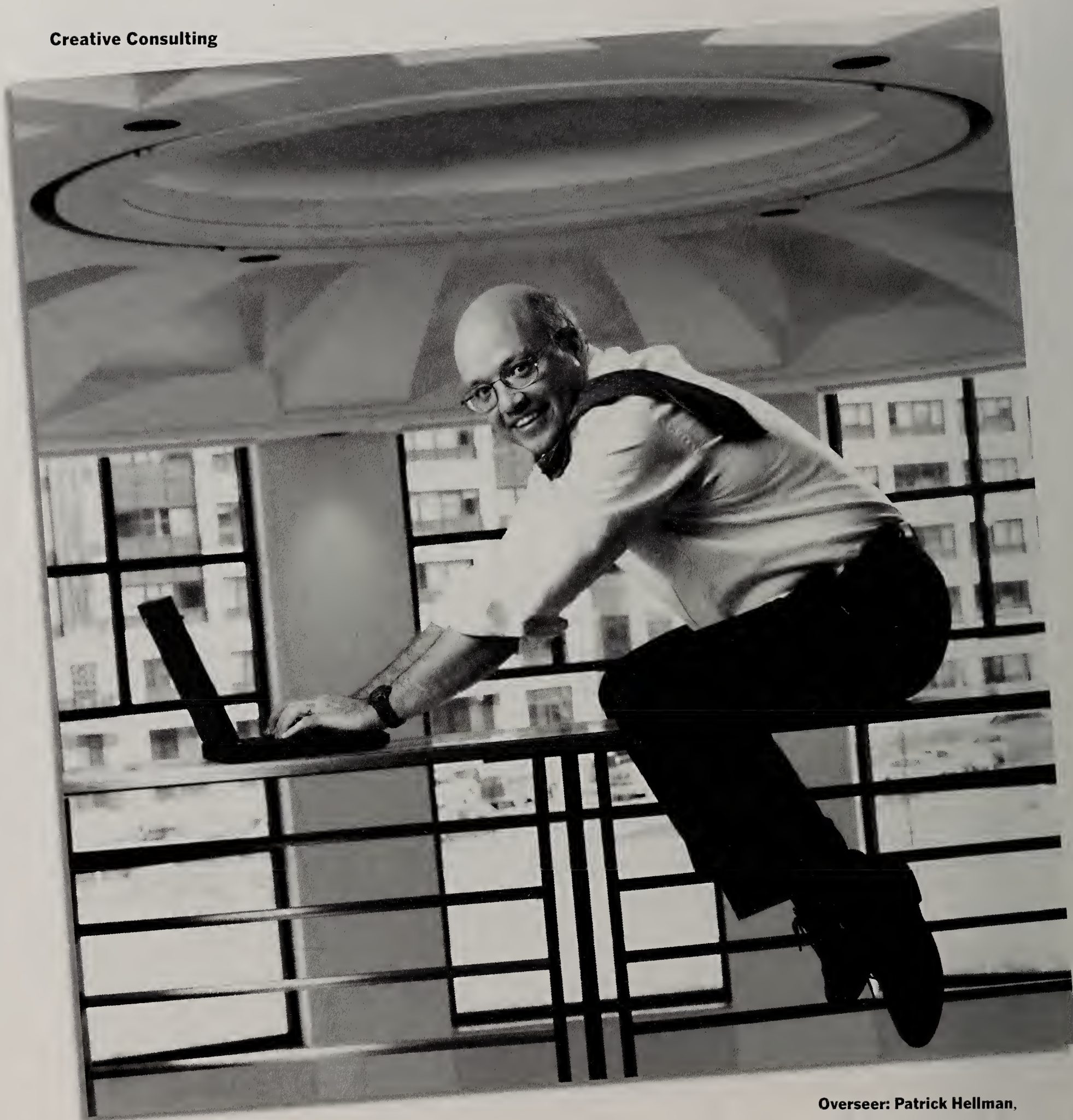
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Overseer: Patrick Hellman,
*J.D. Edwards' IT planning manager,
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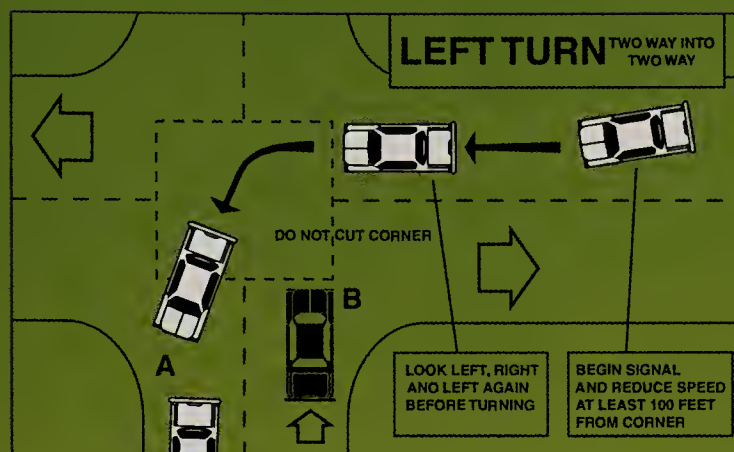
Two weeks later, the university delivered a proposal—before Endry's consulting partner had responded, no less—and Endry took Gupta up on the offer.

Understandably, Endry was anxious about the possibility that he could end up with just a white paper and a system that

didn't work. And his staff, accustomed to working with polished, professional consultants, weren't sure the students would fill the bill. "When the staff first heard we were using students, they thought of green hair and earrings," laughs Patrick Hellman, IT planning and business operations

manager at J.D. Edwards, who oversaw the project.

But Endry and Hellman had good reasons to partner with the school. Not only would the partnership cost J.D. Edwards



or



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Group Efforts

A new networking organization helps business and academic leaders find common ground

It was a radio report announcing Colorado's 11,000 IT job openings that drove Yash Gupta to create the Center for IT Innovation (CITI) in Denver, a collaboration between local CIOs and the University of Colorado at Denver (UCD). The state's economy has exploded in the last 10 years because of growth in the high-tech sector, and universities and corporations have been struggling to keep up with the demand for innovation and resources.

So Gupta, former dean of the UCD Graduate School of Business and Administration, worked closely with Chan Pollock, CIO at Johns Manville, to develop the concept and business plan for CITI. Their goals were multifold: help solve the IT staffing crisis by developing better-prepared graduates, engage private industry in curriculum and educational issues, create a networking forum where CIOs could share ideas, and increase the global awareness of students and faculty in the business school by giving them better access to the business community.

In addition to Pollock at Johns Manville, CITI has recruited some 40 CIOs of major Colorado-based corporations as members, including Coors Brewing, Geneva Pharmaceuticals, Janus Capital, Qwest Communications and US West. A few of the group's members come from the vendor and consulting community—including IBM, Oracle and PricewaterhouseCoopers—but they are expressly forbidden from marketing their wares.

In creating the nonprofit group, Gupta was adamant that it be independent of the university and self-supporting. In fact, CIOs pay upwards of \$7,500 in annual dues to cover administrative costs. "In any university, the bureaucracy is phenomenal and even more so should you receive a dime from the state," he says. The model is working—the group has not lost any members yet.

In the 18 months it's been in operation, CITI has brought to the table two creative partnerships, including a student-staffed consulting project at J.D. Edwards (see main story) and a reskilling program for non-IT engineers, sponsored by US West. A CITI committee also designed an MBA e-commerce degree program for executives that started its first semester this spring out of the J.D. Edwards training center.

much less than what a consultancy would charge, but the University of Colorado faculty had expertise in ABC. In addition, the project required a good bit of upfront analysis and research—something universities do best. It would be a ground-breaking project for J.D. Edwards because ABC

is typically used in manufacturing but rarely in IT services. And UCD would reap its own benefits since faculty members were eager to apply their research to a real-world case and publish the results. It seemed like a perfect fit, and by most accounts, it was.



Yash Gupta helped create a networking forum for CIOs and business schools.

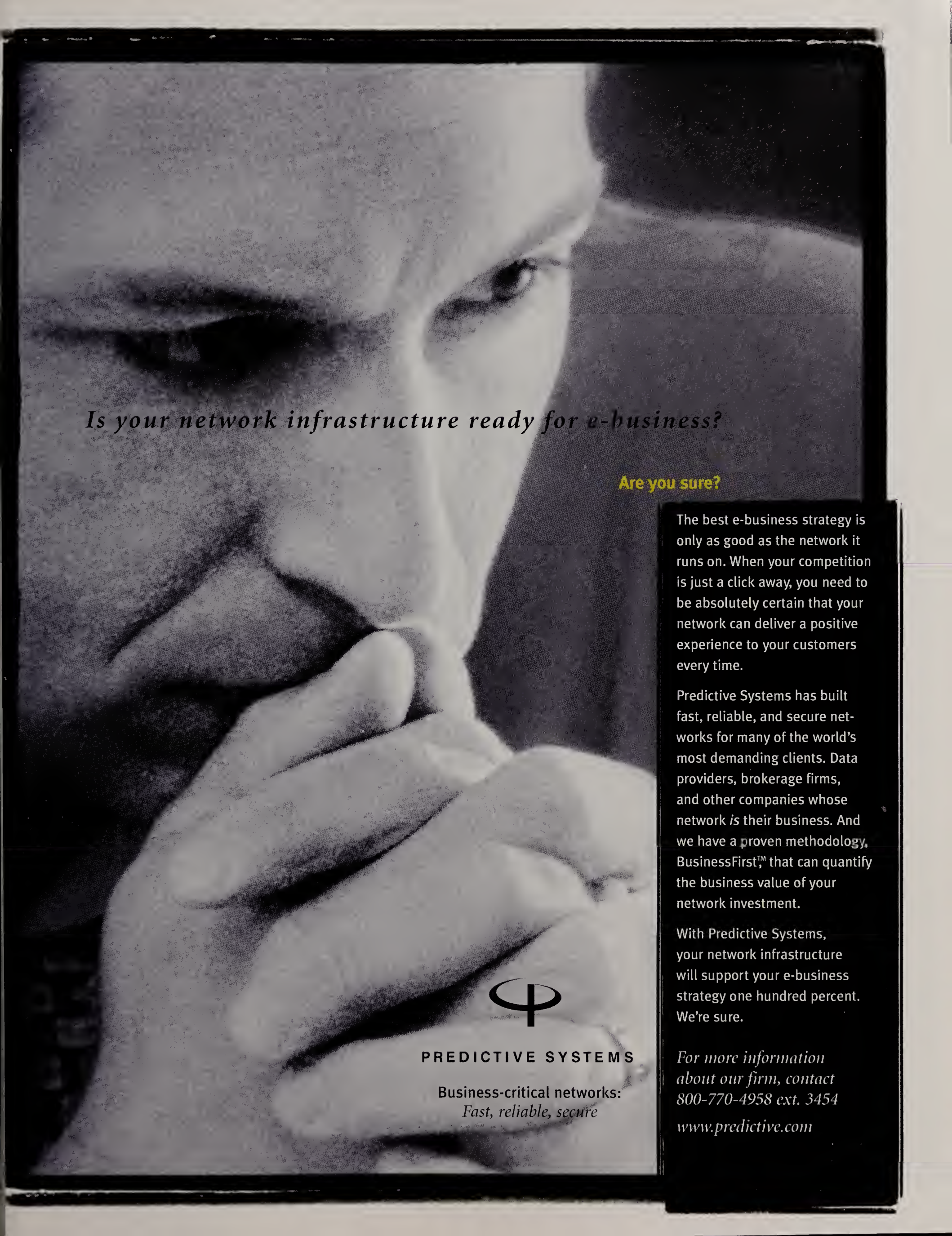
What makes CITI successful as a networking and community action group is its small size. Ted Schaefer, chairman of CITI and partner with PricewaterhouseCoopers in Denver, says it will not grow much larger than 40 to 50 members. "We want the CIOs to be active," he adds. To keep the interests of busy CIOs piqued, CITI will need to make sure it stays focused on their needs. For example, CITI members are finding value in the professional speakers who come to the monthly breakfast forums with advice on technology and management issues, and the targeted programs that will help them fill job openings—such as the MBA e-commerce program, according to Schaefer.

Gupta hopes CITI will become a national role model for new forms of CIO associations. Involving other university departments like engineering and medicine, as well as other colleges in the state, could provide even more value to members, he believes. The concept is something he's pursuing in his current post as dean of the University of Washington's business school. His Seattle version of CITI is launching this spring, and will recruit CIOs nationwide.

—P. Schneider

TEAM building

The first step in building the team was getting to know the faculty sponsors on the project. Endry and Hellman wanted to know a bit about their backgrounds and their approach to the project. The sponsors, Bruce Neumann, UCD accounting professor, and



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Jim Gerlach, UCD associate IS professor, had some real-world experience outside of academia. Neumann has been a board member of some local nonprofit organizations and of a government health-care commission and is also a former auditor. Gerlach on the other hand has worked on other consulting projects for the university, including IS needs assessment work for the Colorado Transportation Institute and for the state's department of transportation. "I've had a lot of connection with business people," Neumann says, "and I knew to have an open mind and to be flexible." His and Gerlach's prior business experience gave Endry peace of mind that he wasn't going to have to deal with ivory-tower attitudes.

Next came the process of selecting the students who would work on the system. That responsibility fell primarily to Neumann and Gerlach, with Hellman having the opportunity to review student résumés as well. The professors went through three rounds of interviewing, looking for candidates with prior business experience, strong communication skills and diverse knowledge in both IT and finance, and who could commit to at least one of the two semester-long phases of the project. It would require 20 hours a week of each student's time, and students could opt for three hours of course credit, hourly

quately cross trained: The IS majors learned cost accounting, while the accounting majors brushed up on IT skills.

Finally, J.D. Edwards had to be patient during the complex task of creating a contract, which took about three months of upfront negotiations. Even so, Gupta—not willing to lose the gig—gave the team the go-ahead to start working a few weeks before the contract was finalized. "It was new for the university and new for us, so there was a lot of back-and-forth with attorneys," Hellman says.

GETTING started

Once the project began in fall 1998, the students were issued company badges like any other consultant and worked out of a vacant room near Hellman's office. They designed their schedules around classes and worked independently, again just as any consultant would. Gerlach and Neumann played largely a mentoring and advisory role to both the students and J.D. Edwards, although they came onsite for presentations and major meetings. Hellman's role in the project was to keep the team on track and to make sure they weren't going off on an unrelated tangent.

In the first phase of the project, the students had to determine whether ABC could work in an IT environment. To do this, they

The Dos and Don'ts of Working with the Local U

DO

- **Take care** of the legal and contract issues early
- **Make sure** you have clear goals for the project and communicate them
- **Schedule** frequent staff meetings with the team

DON'T

- **Sign** a contract before meeting the faculty sponsors
- **Forget** to factor in the academic calendar
- **Be afraid** to use academia for consulting work

measure the IT department had never tracked before. Second, the system needed to track the costs of equipment, supplies and services related to each service area. All this data would give the IT department an accurate picture of how much it was spending to provide a particular service.

After compiling the financial data, the students did independent research on ABC

"The project was new for the university and new for J.D. Edwards, so there was a lot of back-and-forth with attorneys during contract negotiations."

—J.D. Edwards' IT Planning Manager Patrick Hellman

pay or a combination thereof. Gerlach and Neumann were also paid a fixed fee for their time, but they would not disclose the amount.

After selecting a team of 12 students, who were studying for master's degrees in business administration, accounting, finance and IS, and ranged in age from 25 to 40, Gerlach and Neumann enrolled them in training seminars at various workshops in the area. They wanted to make sure the students were ade-

interviewed IT managers from each functional area, including telecommunications, desktop support and databases. During the interviews, students collected general ledger and accounting data showing the cost drivers for each area, such as how telephone charges were calculated. Endry wanted the system to house two types of data: the first being the hours of staff labor worldwide for a given service area such as networking—a

implementations and built a data model using a university-owned software package from ABC Technologies. The first phase of the project took roughly five months.

During the implementation phase of the project, the students spent much of their time porting the model they built to the package that J.D. Edwards had chosen, Metify ABM from Armstrong Laing Group. At this point, Hellman brought in Russell



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Geoff Moore, chairman and founder of The Chasm Group, is among the world's foremost high technology marketing gurus and was recently named one of the Elite 100 leading the digital revolution. A prolific author, his latest book, *Living on the Faultline: Managing for Shareholder Value in the Age of the Internet*, provides new models to help analyze and change current business practices to meet and surpass the challenges of the marketplace.

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Katherine Hudson is president and chief executive officer of Brady Corporation, a \$471M international manufacturer of identification and material

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York, an independent IT consultant with a background in finance, to help lead the students on a full-time basis during this critical stage of the project. York admits he was at first skeptical about the students' abilities, assuming they would be too theoretical. Instead, he says, many of the students had a practical systems and business approach and were quick to speak up if they disagreed with a direction the project was taking. Moldauer, for one, questioned technology strategies during meetings with software vendor Armstrong Laing. Endry agrees with York, adding that the students' collaborative approach was a refreshing change from the know-it-all attitude of some third parties. "They didn't come in and tell us how to run our business, the way consultants often do," he says.

BUMPS *along the way*

While the task at hand was well defined and well suited to the students' analytical skills, cultural issues were not always so cut-and-dried. Students had to adjust to the chaotic nature of the business world, where solving problems is rarely straightforward and schedules change on the dime. "Students thought that deadlines were the most important thing and expected to have instant turnaround and access to people," Neumann explains. Instead, they found that in the business world, outside forces mean that deadlines have to be more fluid than they are in academia and that it's not always easy to get a question answered.

One consideration Endry and Hellman did not anticipate was the academic calendar. On several occasions, they had to make scheduling changes because of semester breaks. In the end, Hellman says the impact on deadlines was minimal because students were flexible about picking up the pace during some stages of the project to accommodate for the loss of time elsewhere. While Gerlach says this unpredictability added stress to the team, Moldauer and another former student, Stepan Tonakanyan, don't recall the conflict at all. Tonakanyan, a former bank CEO with a doctorate in econom-

ics, says managers at J.D. Edwards were responsive and easy to work with. His main struggle was learning how IT departments operate, since he had no prior experience in the industry.

RELATIONSHIP *building*

The student team finished the ABC project on time and within budget in late 1999, approximately 14 months after they began. Endry says he'd call on the university again if the timing and the project made sense. Since the new system was installed at J.D. Edwards, he's achieved his original goals for more accurate bud-

Although one positive experience does not a trend make, this project shows the chemistry that can happen when academia and business work together. Schools need access to businesses because they provide valuable real-world experience, contacts and research opportunities that feed back into the curriculum of their programs. For business leaders, fostering close ties with schools in the local community is an opportunity to improve the quality of education (and by default, the students) and to build the image of their companies in the eyes of graduates.

Moldauer, who was involved in the project from start to finish, couldn't agree

"We really saw the need to reach out to the community, and it's a great way for students to get to know a potential employer."

—J.D. Edwards' CIO Mark Endry

getting methods and cost analysis. "The real savings is that we now know what our cost drivers are," he adds. In addition, business execs are now able to better manage their budgets since the system calculates the actual cost—including labor and services—of say, purchasing 20 new laptops. And Endry hopes that it will eliminate a lot of the wasteful technology spending in the business units.

Along the way, the IT department also gained expertise in ABC, which could drive revenues in new business lines, such as the company's application outsourcing service announced in December 1999. Endry believes that ABC will be perfect for pricing services for those customers. But the experience also makes Endry feel good, knowing he's helping forge a valuable long-term relationship with one of Colorado's larger business and IS programs. "We really saw the need to reach out to the community, and it's a great way for students to get to know a potential employer," Endry says.

more. "For me it was an introduction to corporate America," he says. A globe-trotter who has lived and worked in Germany, Hong Kong, Israel and New Zealand, he hopes contacts he made on the project will be helpful in his search for a consulting job on the West Coast. Meanwhile, Tonakanyan, who will graduate this spring with an MBA in finance, believes that the exposure of working in a large IT department will help him in his quest for a management position in finance. As for the professors, both cite positive changes to their curriculum from the experience. Gerlach says he particularly enjoyed the chance to practice what he preaches. "I get satisfaction out of knowing that the things we're teaching in our curriculum are relevant to business," he says. And that's good news for CIOs, who need recruits who can hit the ground running. **CIO**

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THE BOARD

BY LAUREN GIBBONS PAUL

More and more CIOs are joining external boards of directors to broaden their management skills and make valuable new contacts. The stock options don't hurt either.

PHOTO BY SHUTTERSTOCK/STOCK MARKET

Read to know

- ▶ Why an increasing number of CIOs are joining external boards of directors
- ▶ The potential conflicts of interest that can bar CIOs from joining boards
- ▶ The skills you'll need to be an effective board member

YOU MIGHT THINK Peter Solvik has his hands full serving as CIO and senior vice president at Cisco Systems, one of the world's largest and most successful technology companies. But no. In addition to his in-house duties at the \$15 billion San Jose, Calif.-based networking equipment maker, Solvik serves on four different external boards of directors of internet startup

companies. Why would he agree to serve on these boards, stretching his already-packed schedule to the limit?

Serving on outside boards expands Solvik's management skills. He's learned about reviewing and approving overall corporate strategy and creating financial plans and has beefed up on financing, recruiting and compensation issues. "These are things for which only a CEO and a board are usually accountable," says Solvik. "By having those experiences at a smaller company, I'm broadening my executive capabilities so that I can move toward general management," he says. (Solvik also serves on *CIO*'s Editorial Advisory Board.)

In fact, it was Cisco President and CEO John T. Chambers who recommended that Solvik serve on the boards in the first place. "[Chambers] wanted to provide me the opportunity to broaden my general management skills, to

GAME



PETER SOLVIK
Senior VP and CIO,
Cisco Systems



DAVID DUKES
Former cochairman,
Ingram Micro



PATRICIA WALLINGTON
President, CIO Associates
(Former CIO, Xerox)



BRUCE PARKER
Executive VP
Sapient



“BE CAREFUL. If there’s a hint of a conflict, don’t serve on that board.”

—David Dukes, former cochairman, Ingram Micro

vary the kinds of experience I was getting,” says Solvik.

Being on the board of startup companies gives Solvik exposure to new technologies ahead of the pack. And he also brings back to Cisco a diverse range of e-commerce insights about what’s happening in the market. “I’m learning what technology [internet startups] are buying and what they’re using it for.” Solvik filters this information (without any identifying details) back to his role at Cisco.

Solvik isn’t the only one to take on board membership in addition to his highly demanding day job. “Just about every CIO I know is on a board,” he says. For instance, Dawn LePore, vice chairman and CIO at Charles Schwab & Co., serves on Times Mirror’s board. And David Starr, CIO and head of e-commerce at 3Com, sits on the board of Best Buy.

Indeed, companies of all sizes are increasingly courting CIOs to be on their boards, according to Phil Schneidermeyer, leader of

the technology officer practice at Korn/Ferry International, a Stamford, Conn.-based executive recruiter. “Companies are looking to external thought leaders as to how they can leverage technology to improve customer service, speed time to market and increase market share,” says Schneidermeyer, who recruits technology executives for corporate boards. Requests for CIOs are outpacing any other functional areas, he says.

The trend can be traced back to roughly five years ago when boards of large companies felt inadequate to handle the Y2K problem and began to seek the advice of senior technology executives, according to David R. Dukes, veteran board member and former cochairman of technology distributor Ingram Micro, in Newport Beach, Calif. “The interaction started with Y2K, giving CIOs visibility and a voice they had not previously had,” says Dukes, who still sits on various boards and now recruits CIOs to be board members. “CEOs got very comfort-

able with talking to the CIO,” he says. For the companies Dukes works with, CIOs are the third-most-in-demand board member, after CEO and CFO.

CIOs considering board service should keep in mind downsides such as personal legal liability, potential conflicts of interest and—not least of all—the time commitment. (Solvik works more than full-time hours for Cisco, making up on nights and weekends the time he takes out for board meetings.) But there’s no denying the perks. The emphasis these days is not so much limousines and golf outings as cold, hard cash. According to a 1999 Korn/Ferry survey of 1,000 board members, external board members receive average annual compensation of just over \$30,000 plus about \$1,000 per meeting (with all meeting expenses paid) along with stock options.

Startup internet companies are much more likely to offer only stock options as compensation, thereby linking pay to company performance. Some lucky CIOs have even gotten rich thanks to their extracurricular activities. “CIOs on dotcom boards stand to make or have made significant money,” says Dukes.

Getting On Board

Serving on another company’s board can be tricky. First and foremost, all board members have personal liability for their board service. So, in the event of a shareholder suit, the directors are personally named on the complaint. All companies have directors’ and officers’—D&O—insurance to protect their board members from personal liability, but if you’re considering board service, you’ll want to have your own legal counsel review the policy to ensure it is adequate. (Tip: Make sure you’re covered for your personal legal expenses as well as damages.)

Another important factor to consider is whether you can afford to commit the time. Is this something you will end up resenting rather than enjoying? Board service for a publicly traded company involves an average of 160 to 200 hours per year, according to Ed Merino, CEO of The Office of the



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Chairman, a corporate board consulting firm in Irvine, Calif. Patricia M. Wallington warns that CIOs must take the time to investigate the firm's business climate. If the company is involved in a shareholder suit or is ripe for a merger or acquisition, that will signal a heavy time commitment—several extra days per month of meetings would be a common requirement for a board member of a company in the midst of a major transition. "People often forget the time commitment," says Wallington, former CIO of Xerox, now president of CIO Associates, a consulting firm in University Park, Fla. Wallington currently sits on the board of Comerica, a multistate

financial services provider. (Wallington also serves on CIO's Editorial Advisory Board.)

Dukes cautions that CIOs in due diligence mode get to know at least the chairman of the board. You should try to establish that you like and respect the chairman, and—ideally—a few other board members. If not, board service will seem more like a chore than a calling.

And potential conflicts of interest lurk in the background. All companies have ethical guidelines that spell out conflicts of interest that would bar their executives from serving on a particular board. The overarching principle is that a board member must do

nothing that compromises the shareholders' best interests. This is part of the directors' fiduciary duty of loyalty to the company set out in corporate law, according to Merino. "A good rule of thumb is that there should be as much independence as possible between the home company and the board company," he says.

In a situation where the CIO's home company spends three-quarters of its IT budget on the board company's technology, for example, there is an implication that the CIO might pay more for the technology in order to increase the value of his stock options at the board company. That



WHAT DOES IT TAKE?

Skills you need to be an external board member

Serving on an external board of directors requires a very specific skill set, one that might differ from what you're used to. Here are the top skills you'll need to earn your place in the boardroom.

Ability to think strategically. "You must have a strategic mindset, an ability to see where the business is going," says Phil Schneidmeyer, leader of the technology officer practice at executive recruiter Korn/Ferry International in Stamford, Conn. "If historically you've been viewed as a back-office support function to the company, it will be a challenge for you to be part of the strategy discussion and have an impact on the direction of the company." CIOs must become accustomed to thinking of the big picture, concurs Patricia M. Wallington, a veteran board member and president of CIO Associates in University Park, Fla. "When you're on a board, you're managing on a different level. You can't be a micromanager. You have to take the long view," she says.

Ability to communicate 360 degrees. Obviously, you must be able to form good relationships with the CEO and your fellow board members. But your task doesn't stop there. "CIOs must be

just as good at communicating with the line managers," says Schneidmeyer. "Middle managers are going to approach you, and you'd better have something to offer when they do," says David R. Dukes, veteran board member and former cochairman of Ingram Micro in Newport Beach, Calif.

Excellent business skills. It's a scary prospect to imagine being a board member if your general business skills—finances in particular—are not up to snuff. It will quickly be apparent if you do not have business basics (such as what it means to have a fiduciary duty to the shareholders and the ins and outs of a 10K) down pat.

Ability to lead, motivate and develop people. Succession planning is one of the major roles that a board member plays—CIOs must have at least some familiarity with this topic. "Never forget you're helping to establish the culture at a company. You can affect the quality of the work environment. The walls of arrogance that used to exist between board members and the management are gone," says Dukes.

—L.G. Paul



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is, of course, unacceptable.

In today's world of frequent mergers and acquisitions, it is common for a conflict to arise during a board member's service. Say, for example, the CIO's board company gets purchased by the arch rival of the CIO's home company. In this case, the independence between the two companies may be compromised. Conflicts will come up, says Merino. Full disclosure is the solution. "Once you've disclosed the facts that give rise to the conflict, you remove yourself from it," he says. In some cases, resigning from the board may be the only way to resolve the conflict. There are many gray areas that are tough to call. All can be resolved, says Merino, by disclosing the situation and doing whatever is necessary to act in the shareholders' best interests.

Time Out

Education is the top reward most CIOs cite as the reasons for adding the complexity of board membership to their work lives. When she was CIO at Xerox in the late 1990s, Wallington served on the board of Fina, the U.S. subsidiary of Belgium oil company PetroFina Group. When PetroFina made an offer to acquire 100 percent of Fina's stock, Wallington had to bone up on acquisitions—fast. "I had to learn about stock prices, legal liabilities and hiring investment bankers," recalls Wallington.

"That was a pretty interesting experience," and one which she probably would not have had at Xerox, says Wallington. One caveat: The more interesting the experience, the more time-consuming it will likely be. Wallington recalls during the proposed Fina acquisition, her board duties ate up 10 percent of her time, or roughly two extra business days per month—up from about one day every quarter. (Most boards meet four to six times a year; in addition to meetings, board members have conference calls about once a month for routine business and e-mail correspondence.)

Being on a board tends to fatten up one's Rolodex, sometimes in unexpected ways. Since Solvik sits on boards along with part-



"THE EXCITEMENT I felt on the board at the other company was too compelling to ignore." —Bruce Parker, executive VP, Sapient

ners at prominent venture capital firms, he often gets introduced to new talent with new ideas. Back in 1995, a partner at Sequoia Capital—a fellow board member—introduced Solvik to the young founders of Calico Commerce. Calico had a client-server-based configurator program that turned out to be a perfect fit for one of Cisco's previously unfulfilled needs. On Solvik's recommendation, Cisco became one of Calico's earliest customers (though Cisco's interest in Calico precluded Solvik from serving on its board).

"We got very early visibility into a company before it was even venture-funded. We were able to have a lot of influence over them and how they developed their product," says Solvik. "We have relationships with a lot of startups, VCs and other members of the internet ecosystem. We tend to find out about new trends very early in their development."

Conflict Management

Being on a board of a nascent company can give CIOs the opportunity to help grow a ven-

ture from the ground up. "I tend to be a builder. I like to create things," says Bruce Parker, executive vice president at Sapient, an e-commerce consulting company in Cambridge, Mass. Two years ago, Parker joined United Airlines as CIO and senior vice president of information systems. One condition of his employment was that he be allowed to stay on the board at Sapient, which he had joined in late 1995 while he was CIO and senior vice president of management of information systems at Ryder System.

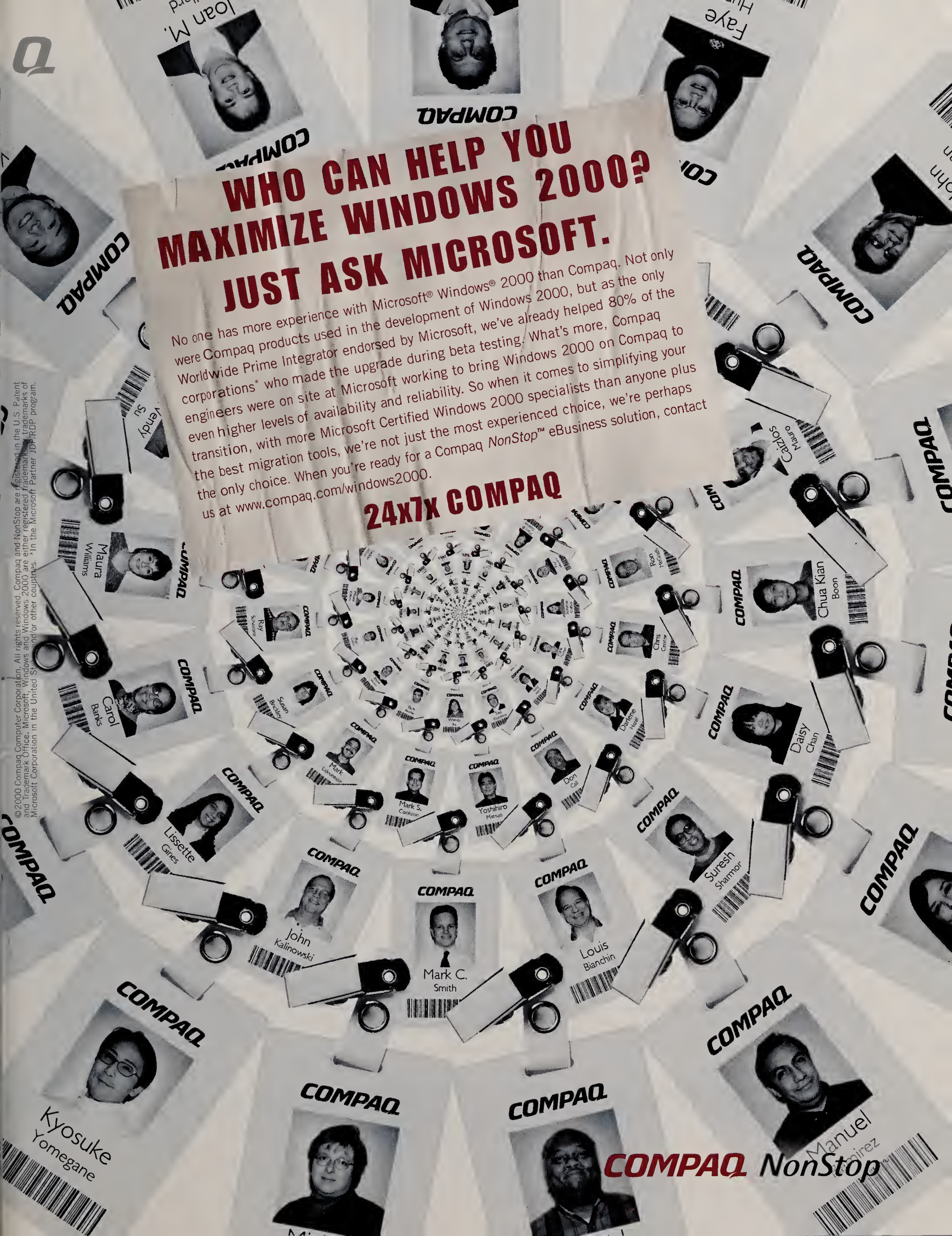
As the years went by, Parker found being close to Sapient put him at ground zero of the new economy. "I was attracted to the freshness, the newness, the growth. It was so exciting to watch Sapient transform itself into a premier e-commerce services company," he says. Sapient built the website *nordstromshoes.com*, the largest online shoe store. The company constructed sites for eTrade, Hallmark and BankBoston. Sapient also built United Airlines' e-commerce site—when Parker was CIO of United.

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WHAT TO CONSIDER BEFORE YOU JOIN A BOARD

Have you been approached to be a board member for an outside company? It's flattering, for sure, but be sure to ask yourself...

Why do they want me? A company has a reason for asking you in particular to be on its board. What was it that attracted the company to you? What expertise does the chairman believe you will bring to the table? Do you have that expertise? Will you be able to contribute to the growth and development of the company?

Why would I want them? Investigate the company's industry and try to get a sense of its prospects. Get to know the chairman and other board members. Investigate the company's litigation history. If the company is failing, you'd better know that going in. In that case, make sure you stipulate to the board chairman—in writing—that you were not part of the company's downfall, but rather are attempting to turn it around.

Do I have a conflict? Along with your company's legal counsel, you'll need to examine closely your company's relationship with the proposed board's company. Ideally, there should be an arm's length distance between the two. Look into your own motives: Is there anything that would prevent you from serving the shareholders' best interests?

Do I have time? If you're already working 80 hours a week, board service is probably not a good idea. You'll have to attend meetings in person at least four times a year and be available to other board members and middle managers for questions and guidance. An event such as a merger or shareholder suit will increase the time commitment exponentially.

—L.G. Paul

To mitigate this conflict of interest, Parker recused himself from all decisions regarding the choice of web developer for United's site. "When it came to the selection of the vendor, I did not enter into the conversation," says Parker. "It wasn't really hard to do, as a practical thing. Emotionally, it was a little more difficult. I clearly had a feeling about who [the vendor] should be but I understood the need to stay out of it." Parker worked with United's top management and legal department to ensure he had no undue influence in the eventual decision to go with Sapient.

In the meantime, Sapient had gone public, and the issues facing the board were more interesting than ever. Late last year, Parker admitted to himself that he wanted to work full time for Sapient. After working on a multi-airline travel portal in his role as CIO at United, he recognized e-commerce is where it's at. "I realized industry is going through a huge change and Sapient is a key part of that. I reached the stage of my life where the excitement was too compelling to ignore." He tendered his resignation to

United with regret but without remorse.

Says Parker, "I don't think [United management] felt betrayed. They knew why I wanted to do this. There was nothing surprising about it." He adds that there was nothing in his employment contract to restrict him from going to work at Sapient.

Several high-profile CIOs like Parker have left their home companies to pursue a full-time role at the company on whose board they serve. While Tom Thomas was CIO at 3Com, he served on the board of Vantive, a customer relationship management software vendor. Thomas subsequently left 3Com to become CEO of Vantive. Though companies' ethical guidelines usually don't expressly prohibit this behavior, that might change if more CIOs jump ship to work for their board companies, especially given the dearth of talented CIOs, says Wallington. The realm of board membership to date has been based on "gentlemen's agreements." Most companies do not micromanage their officers. The tradition is not to discourage the person from serving on the outside board. That's been the

tradition, but it certainly could change.

Despite these gray areas, most CIOs who have served on a board downplay the potential for conflicts of interest. "[A conflict] is a checkoff item that is handled early on. So be careful. If there's a hint of a conflict, you don't do it," advises Dukes. In any case, the ethical issues are no greater for CIOs than for any other board member.

"You have to be careful about potential conflicts," says Solvik, who turns over any conflict questions to Cisco's legal services department for in-depth examination. Most board members serve on an average of two boards, and many companies restrict their executives to serving on only one external board. Just in case you're looking for a high-profile CIO to serve on a board, please don't call Solvik. With four board memberships, "I'm maxed out," he says. **CIO**

What's been your experience on other companies' boards? Let us know at letters@cio.com. Freelance writer Lauren Gibbons Paul can be reached at laurenpaul@mediaone.net.

An illustration of two people climbing a yellow ladder that extends from a green hill at the bottom into a blue sky with white clouds. The ladder is missing a rung near the top. A man in a red jacket and blue pants is higher up the ladder, reaching for the missing rung. A woman in a green jacket and purple pants is lower down, also reaching for the same rung. The ladder is yellow and has several rungs. The background is a soft-focus landscape with a green hill and a blue sky.

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BY TRACY MAYOR

Learn how teaming up with the government can help

- ▶ Improve the management of federal agencies
- ▶ Lower taxes and cut red tape for your company
- ▶ Create unusual networking opportunities

If you imagine that the only companies interested in such a socially responsible project are the makers of organic toothpaste or handmade ice cream, you're probably not alone. But you'd be wrong. Instead, it's powerhouse corporations like Boeing, Chase Manhattan, Ernst & Young, Northrop Grumman and Pricewaterhouse-Coopers—all hand-picked, chosen performers in their fields that are members of the

PHOTO BY WALTER P. CALAHAN

ry public good

"We neither solicit nor accept grants from government, and that's one of the things that allows government to come to us and get an independent point of view."

*— Thomas Fritz
President of the
Private Sector Council and
CEO of Ernst & Young*





Meredith CIO William Crowell wants process improvements—not politics—from the PSC.

Washington, D.C.-based Private Sector Council (PSC).

Working with the PSC may be pro bono, but it's not without corporate benefit, members say. Helping the government increase its efficiency pays dividends to all domestic companies in the form of lower taxes and less red tape. PSC participants get early knowledge of new federal systems and programs that may affect their specific business processes. And finally, members report, the charitable spirit of council meetings leads to an unusual degree of openness and makes for top-notch networking.

The corporate members of the 17-year-old, nonpartisan council team up with such federal agencies as the U.S. Customs Service, Department of the Interior, General Accounting Office and Department of Agriculture to improve the efficiency, productivity and management of the federal government. "We don't go to government and point to matters that are problems; government comes to us," explains Thomas V. Fritz, PSC president, and chief executive officer and 33-year veteran of Ernst & Young. "We neither solicit nor accept grants from government, and that's one of the things that

allows government to come to us and get an independent point of view. We're not even suspected of having an agenda."

The Private Sector Council was founded by Hewlett-Packard's David Packard and the late William Onsted, who had just finished working on the Reagan administration's Private Sector Survey on Cost Control. The

PSC initially concentrated on financial and executive issues, and the CFO/Senior Executive Task Force remains its largest working group. The newer Information Management Technology (IMT) Group, formed in 1995, has attracted CIOs and other technology officers from corporations like BankAmerica, Dun & Bradstreet, J.C. Penney, Lucent Technologies, Mobil and US West (see box below).

The IMT hosts two meetings a year, attended by both private-sector members and representatives from such federal agencies as the Defense Department, the General Accounting Office, the Postal Service and the Treasury, at which hot-button issues like security, data consolidation and total cost of ownership are debated in what

members say is an unusually frank arena. "The conversations are very open," says former U.S. Postal Service CIO Norman Lorentz, now CTO of EarthWeb. "The first meeting I went to, the GAO presented some valuable metrics on public versus private projects. It made me decide I wanted to go back," Lorentz recalls. "At the second meet-

Information Management Technology Group Members, 1999

BankAmerica
CNF Transportation
DMR Consulting Group
Dun & Bradstreet
Innovative Systems
Interpublic Group of Companies, The
J.C. Penney
Lucent Technologies
Marsh & McLennan Companies
Meredith
Mobil
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NOTE: For a list of the 2000 IMT Group members, visit this article online at www.cio.com/printlinks

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ing, the cochair did a key presentation on security that really heightened my awareness. If my hair could've gotten any grayer with worry, it would have," he jokes.

Apart from these biannual roundtables, the IMT's real work lies in matching member companies with federal agencies on technology projects. In 1999, various IMT members pitched in on the Department of the Interior's Financial Management Systems Migration plan; participated in the GAO's study of effective

CIO practices in leading organizations; reviewed and commented on the Department of the Interior's efforts to streamline business and financial processes; helped fine-tune the Federal CIO Council's strategic plan; assisted in ground-floor development of the Government Information Technology Services Board's forthcoming Center of Excellence for Information Technology; and continued work with the U.S. Customs Service on its multiyear IT architecture and modernization project,

which has been plagued by ongoing funding difficulties. (See "When Bad Things Happen to Good Projects," Page 198.)

The Private Sector Council's lean, six-person staff is responsible for making sure these projects and the others it tackles, about 12 to 15 each year, are as effective as possible. The application process itself is informal—a phone call from a federal agency to Fritz or one of his staffers is all it takes to get the ball rolling, followed up with a two-page state-

The criteria for accepting a project?
That it's interesting and will bring
better efficiency to government.



US West's Jerry Knutson speaks the same language as the other IT professionals in the PSC.

ment of work. In contrast, the criteria for accepting a project are quite rigorously defined and adhered to, according to Fritz. "Will [the project] bring better efficiency to government?" Fritz asks. "Does it have leadership and ownership within government? Do we have members who have the skill that is being sought? And is it likely to be a project that our members would find interesting?"

Once a project is accepted, Fritz and PSC Project Coordinator Erica Prentice determine which member companies have skill sets and experience that most closely fit the bill, then Prentice sends a project summary via e-mail or a letter to the top half-dozen to gauge interest and narrow a list of possible partners. On the receiving end, corporate CFOs and CIOs identify one or two of their employees who are able and willing to participate, and the partnership—usually a series of D.C.-based meetings—proceeds from there.

NOT A STATIC THING

To ensure successful partnerships, Fritz, Prentice and the IMT co-chairs keep close tabs on member companies. PSC is thoroughly briefed on each company's specific skill sets and inter-



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ests and makes sure that each member is still on top of the best practices in his or her field. "We're constantly looking at companies that are at the head of the game and inviting those companies to participate," says John Puckett, cochair of the IMT group and CIO at Toysmart.com. Membership in the PSC is not a static thing, says Puckett. "We're always asking what value [member companies] can provide."

Participation is strictly strategic and scrupulously nonpolitical. "One of the keys that has made PSC successful over the years is that they're not involved in any matter related to government policy," says William Crowell, an IMT group member and CIO at Meredith Corp., the Des Moines, Iowa-based publisher of *Better Homes and Gardens* and other magazines. "PSC is into process improvement, not mission or goals."

That means that the PSC would be happy to look at the operation of the education department to help improve its effectiveness, explains Crowell, but it would decline to talk about what policies would produce better-educated children. "They try to keep focused on the effectiveness of government and steer clear of policy and politics," he adds.

In the quest to remain apolitical, IMT members may actually be aided and abetted by their profession. "We're IT professionals, and as such we're able to use a kind of universal language that adapts itself to any kind of business or technology issue," says Jerry Knutson, vice president of communications information services for US West in Denver and the other cochair of the IMT group. "The approach to creating solutions is universal regardless of what the business problem might be or what agency of the government you're dealing with."

What, specifically, does the private sector bring to the table that government can't provide on its own? Members on both sides of the partnership emphasize that the PSC isn't there to bail out government projects or ride in on a white horse with a faster, better, cheaper solution. But both groups acknowledge that there are some areas where the private sector excels over its public counter-



U.S. Customs Charles Armstrong is working with PSC to refine a migration project.

part. In particular, federal agencies want to learn about methodologies and practices, strategies and technologies, and what's worked and what hasn't in the corporate environment.

Government wants to know about technologies that have been deployed successfully and the decision-making processes behind them, says Puckett. "They ask, Is this or that technology sound? What's the return on investment? How much effort is required to support this? What are your plans for the future?" he says.

Former USPS CIO Lorentz, who has experience in both the private and public sectors, says management and mind-set are two areas where the government can use corporate insight. "Government is fixated on the fact that it's different, but it's really not. We try to focus on the customer and

make sure the IT infrastructure fits the business, just like anybody else," Lorentz says. One key difference, he says, is that private projects are nearly always keyed to business metrics, while public projects are often driven by program budgets, which may or may not be politically motivated. "Business metrics drive costs, and that's what drives the private sector. Government could stand to be more like that."

THE WAITING GAME

Government, members say, could also stand to fund at least some of its projects in a more linear way. The U.S. Customs Service, which is currently two-plus years into a massive modernization effort to update its technology strategy and develop an architecture framework,



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called on Private Sector Council IMT group members Hewlett-Packard, Innovative Systems, Mobil and US West for input at several key junctures. But at press time, the future of the upgrade effort's central component—a new shipment-processing system designed to improve the quality and efficiency of services provided by Customs—was questionable in the face of persistent reluctance from Congress to fund such a large project in one fell swoop.

Customs initially turned to the PSC two years ago after the General Accounting Office complained that the agency hadn't done enough work on its architecture. "The PSC sat down with us and helped us fill out the architecture and review the development process," says Charles Armstrong, director of the Customs Modernization Office. Team members are currently working with Customs to refine the migration strategy from the legacy system to the automated commercial environment processing system (ACE) and waiting, along with many others, to see if the project receives sufficient funding over the long term.

Armstrong says he was pleased with the informal but effective give-and-take nature of negotiations with PSC on building a team to work on the project. "We were upfront. We knew where our vulnerabilities were and where we needed to focus our efforts." In return, Fritz and PSC front-office staff identified member companies with experience in large-systems development, customs and architecture development.

One such expert is Madeleine Le, information systems director of tax, licensing, customs and logistics for Hewlett-Packard in Palo Alto, Calif.

With Customs officials, Le has examined personnel issues such as how to recruit and motivate people, management issues such as identifying the project's owners and determining who will be responsible for the system's data and architecture, and rollout concerns like mitigating risk and transitioning from the old system to the new.

These high-level, far-ranging discussions require a couple of hours of her time every

When **Bad** Things Happen to **Good** Projects

Government bureaucracy at its best (and worst)

If its work with the U.S. Customs is any indication, the Private Sector Council needn't disband anytime soon: In one key area at least—funding—the government still has a long way to go before it will look anything like corporate America.

"We've been working on trying to get a business case and funding together for ACE for several years," says Charles Armstrong, director of the Customs Modernization Office, referring to his agency's Automated Commercial Environment (ACE) processing system. In February, however, Customs suspended the project because it was almost certain Congress wouldn't approve its budget request for \$15 million, the cost to keep the pilot and project preparation activities up and running. That figure is just a fraction of the \$210 billion needed to build the first phase, to say nothing of the \$1.4 billion to \$1.8 billion needed over the life of the upgrade.

A \$3 million infusion from the Treasury Department, pulled together in March, is now keeping the pilot system running temporarily, but people working on the project, including PSC volunteer companies, aren't overly optimistic.

"This is one of the most major tech projects that the government would ever undertake, and they're trying to fund the front end in a year when there is an election," observes Thomas V. Fritz, president of the Private Sector Council and CEO of Ernst & Young. ACE won't be completed and its benefits won't be realized until long after the election, Fritz points out. "Is there a hesitancy in those who are elected to vote for a project like this? The short answer is yes," he says. "But politicians are very often myopic. It's just one of the problems that our democratic form of government has to deal with."

While a trade coalition of large retailers lobbies for Customs to continue work on the project, PSC volunteer companies like Hewlett-Packard try gently to suggest workarounds to the current funding impasse, with little success thus far.

"We have a lot of passion to contribute and to make things work, but there are so many barriers to getting things done with the government," concedes Madeleine Le, information systems director of tax, licensing, customs and logistics for Hewlett-Packard in Palo Alto, Calif.

When it became clear that funding was in jeopardy, Le and Jerry Knutson, vice president of communications information services for US West in Denver and cochair of the PSC's Information Management/Technology group, suggested that Customs accept help—in the form of workers—from companies like HP, which has a direct interest in seeing a faster, more efficient import-processing system in place.

"They're concerned about not being able to recruit, but we can recruit people, so we offered up the idea," Le relates. "But then they came back and said that they don't want to use outside people because of all their security clearances."

For all her disappointment, Le is quick to reaffirm her belief in the system and her hope that eventually it will see the light of day. It's a sentiment echoed by PSC's Fritz, who counsels his volunteer organizations to take the longest view whenever possible. "Someday our efforts will bear fruit," he says. "Customs has a good team with a good plan, and we're there helping to advance their efforts and right now just hoping for the best."

—T. Mayor

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two or three months, with day-long meetings in Washington, D.C., at longer intervals. Why do private-sector corporations like Hewlett-Packard lend out top-tier employees like Le? For many reasons, executives say, but chief among them is a genuine feeling of civic duty. Fritz talks of the need to “help our government become better.” Puckett mentions wanting to “make a difference in the way the country is being run.” Knutson alludes to “being a good corporate citizen and doing our thing for the public sector.”

If those comments sound like they’re coming from a bunch of Boy Scouts, think of them as Boy Scouts working on their capitalism badge.

In the big picture, executives hope that helping government become more efficient will eventually pay back all U.S. businesses in the form of lower taxes, fewer bureaucratic burdens and streamlined government interactions. Meredith’s Crowell, who characterizes his company’s involvement in PSC as more bottom-line oriented than altruistic, says, “If we can make government more efficient and reduce waste, we’ll see reduced taxes and greater economic growth.”

On a more personal level, the IMT group’s biannual meetings are simply a great networking night out, regardless of which side of the public-private divide an organization happens to fall. Because members are gathered for a good cause, competitiveness and defensiveness are replaced with candor and a willingness to share failures as well as successes, executives report. “The other CIOs on the council are pretty impressive. We talk and share our experiences in the private sector—all new things that we’re doing and the issues we’ve found—and we’re all learning from each other,” says Toysmart.com’s Puckett. “I appreciate feeling like I can give any of them a call, and I’m sure the same applies equally to the government agencies that come.”

Finally, it’s a rare corporation that can say with impunity that it’s not somehow influenced by

the government’s business. By participating in PSC projects and roundtables, companies gain firsthand, early knowledge of issues that can have a significant impact on their own bottom lines.

The spirit is one of colleagues in collabora-

tion rather than of commerce dictating to civil government. It’s a tone that the PSC has set since its inception, says Fritz. “The private sector does not know more or everything about how government should be managed, but because of funding and political implications, government has fallen behind in modernizing technology,” he says. “We want to work with the people in government who want to change government. We want to be the carrot.” **CIO**

Interested in socially responsible IT projects? Let Managing Editor Elaine Cummings know at cummings@cio.com. Freelance writer Tracy Mayor can be reached at tmayor@shore.net.

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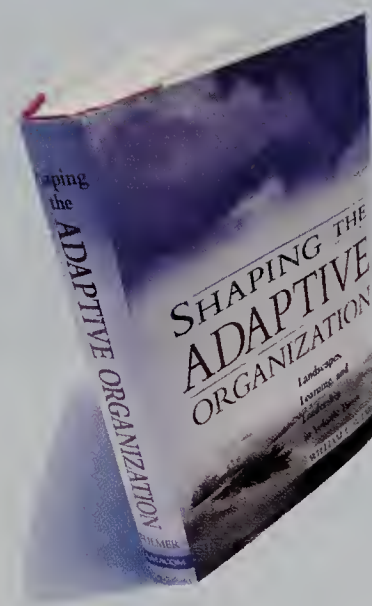
WILLIAM E. FULMER

If they want to succeed, companies need to walk the fine line between stability and change, what consultant and educator William E. Fulmer terms the “edge of chaos.” The reality, however, says Fulmer, is that most companies are intensely uncomfortable being anywhere near that edge and for that reason are struggling in today’s complex environment, where change is rapid and success is uncertain. Fulmer, a senior fellow and senior vice president of the Executive Development Center at Harvard Business School, asserts in his new book, *Shaping the Adaptive Organization: Landscapes, Learning and Leadership in Volatile Times*, that companies must accept the paradox that the only permanent business reality is change. Borrowing from the language of biology and evolution, he details how companies that adapt survive.

How fit, or successful, a company will be, in Fulmer’s view, depends on its adaptive skills in three areas. First, an adaptive organization understands its competitive space, or “landscape,” and is able to measure that landscape’s “ruggedness,” or its risks and opportunities. Second, an adaptive organization is, at heart, a learning organization, one that stays in touch with customers and rewards innovation. Third, the leadership of an adaptive organization demonstrates that it not only welcomes change but nurtures it. An organization with these three L’s—landscape, learning and leadership—will be able to embrace change and function effectively in today’s exhilarating and frightening economy. In Chapter 10, “Leadership in a Complex Environment,” Fulmer discusses 10 activities with which corporate leaders can create an environment of success in their companies.

Leadership on a rugged landscape seems to require constantly working to shape an environment where change always is possible and usually is occurring. But it is an environment that also is finely balanced between surprise and order. When 3M’s CEO talks about the foundation of 3M being innovations and stability, he is describing, in organizational terms, the edge of chaos—a mixture of stability and flexibility, a compromise between order and surprise.

Using different language but describing a similar balancing act, [Intel Chairman] Andy Grove talks about the importance of an organization being able to deal with debate and disagreements over an uncertain future, but also being able to rein in chaos and pursue a “determined march.” The determined march and the environment of chaos are the equally important sides of the leadership coin. In an interesting choice of words, Grove describes an organization that can balance such



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***Shaping the Adaptive Organization:
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 by William E. Fulmer
 (Amacom, 2000, \$29.95)

qualities as a “powerful adaptive organization.”

I am convinced that the role of a business leader in the 21st century will be to create and nurture an environment that allows the organization to operate at the edge of chaos, a place where fitness can be at its highest. To successfully lead in this type of environment requires a nontraditional view of leadership. Rather than the hero as a lone figure trying to control the organization or drive the record-breaking car, the leader will be a catalyst and facilitator.

In this chapter I identify 10 activities that leaders of large organizations can emphasize to help shape a coherent environment that can handle constant and significant change and thereby achieve breakthroughs. Many are applicable to small organizations but are especially applicable to larger, more complex organizations.

1 Build and manage a network of personal relationships.

Just as business organizations need to have a network of relationships with other key agents on their landscape, so business leaders of established organizations need a network of relationships if their tenure at the top is to be successful.

Building and maintaining this network of relationships



Leaders need to frequently ask themselves and others, “What if?”

involves more than just establishing relationships with direct reports. It includes establishing relationships with people throughout the organization as well as carefully chosen outsiders who can help people in leadership positions achieve their organization’s goals. It may involve building relationships with people already in the organization, but it also may require replacing people who may not be as helpful in the future as they will need to be. People more in tune with the challenges of the future may have to be added to the network.

[Harvard Business School professor John] Kotter found that the best managers ask, encourage, cajole, praise, reward, demand, manipulate and generally motivate others with great skill in face-to-face situations. He also found that they rely more heavily on indirect influences than less capable managers who are more likely to rely on a more narrow range of influence techniques and apply them with less finesse. In other words,

effective leadership is a very subtle process of building and utilizing a network of agents throughout the organization.

2 Study the landscape.

Although the future cannot be predicted at the edge of chaos, one thing is clear from the work that has been done on complex systems—there are patterns of behavior. That does not mean that they are easily seen at any point in time. It does, however, mean that many companies need to devote more resources and more CEOs need to devote their time to trying to understand the landscape on which their organizations operate. A key role of leadership in an adaptive organization is to be a student of the landscape.

Such leaders have to be honest about what they see around them. What are the developments, patterns and trends among our competitors, both current and potential? What about our customers? Or our suppliers? What might they mean for us and our current strategy? How can we use these insights not only to respond to changes but to shape the future in our favor? Leaders need to ask themselves and others, “What if?”

In Silicon Valley, it is not uncommon for leaders to take short sabbaticals so that they can gain new perspectives. Grove

talks about supplementing “management by walking around,” which was an early Silicon Valley practice, with “management by reading around.” He believes that surfing through a high volume of electronic communications leads to the occasional random insight that may help him gradually reposition Intel’s strategy.

How can leaders help people understand what their landscape is like if the

leaders cannot see what is happening—internally and externally—to the organization? Leaders need to be constantly exposed to insiders and outsiders who can help them better understand their landscape.

3 Set high expectations.

For senior business leaders, increasingly detailed agendas are being replaced with much shorter agendas. Often they take the form of broad goals or targets and these goals frequently are stretch goals. GE was one of the first organizations to institutionalize the idea of stretch goals. According to [GE Chairman and CEO] Jack Welch, stretch means moving beyond being as good as you have to be—making a budget—to being as good as you possibly can be—setting impossible goals and going after them. He adds, “If you do know how to get there, it’s not a stretch target.”



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More and more, corporate leaders seem to be adopting stretch goals. In 1992, Boeing's CEO set a stretch goal of reducing the cost of manufacturing a plane by 25 percent by 1998 and reducing the time needed to build a plane from 18 months in 1992 to 8 months in 1996. In 1993, Hewlett-Packard vowed to go from a marginal PC maker to a top-five player by 1997. By 1997, it was the world's number-three supplier of PCs, and in September of that same year announced its goal of being number one in four more years.

For stretch goals to work it is essential that the leader believes the goals are attainable. According to Marc Seriff, America Online's cofounder and first head of technology, "In a little company everybody's got to believe. But there needs to be somebody who believes no matter what. That was Steve [Case]. Steve believed from the first day that this was going to be a big deal."

4 Let go.

Perhaps the hardest suggestion I will make in this chapter to many business leaders is to let go. In the words of an execu-

tive at 3M, "Managers must set goals, then get out of the way." On a rugged landscape leaders have to trust that the people in the system will do good things more often than not. On a rugged landscape I believe a top-down, command-and-control system generally will do more harm than allowing people at lower levels to make some mistakes—especially in an organization with capable people.

Getting out of the way can be a very scary thing to do at first. Many traditional executives see it as giving up power and control. I believe that it actually increases the power inherent in the system and that the leaders never had the real control that many thought they had.

Intuit's cofounder, Scott Cook, describes a way of visualizing an organization where top management gets out of the way: "I think of an organization not as a hierarchical triangle but as a circle with the leaders in the middle and the customers scattered around the perimeter. As the circle gets bigger, the leaders become subtly insulated from the customers. So I think the role of the leaders in a growing organization is to push the decision-making and control out to the edges as much as possible."

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This is similar to Sam Walton's philosophy that helped lead Wal-Mart to fundamentally change the retailing landscape. When Walton was building Wal-Mart into the leading retailer in the United States, he often talked of "servant leadership." He saw the role of the leader as one of providing workers with whatever they needed to serve the customer in the stores—merchandise, capital, information, inspiration—and then getting out of the way.

5 Be available.

Getting out of the way does not mean abdicating responsibility. The leader of a firm on a rugged landscape has to be available to help others, especially customers and employees.

The technology community is filled with executives who reflect this. Eric Schmidt, the chairman and CEO of software maker Novell, reportedly met with more than 25,000 cus-



Managers must set goals, then get out of the way.

tomers and flew more than 200,000 miles during a recent 12-month period. Sometimes being available is as simple as asking questions or sharing information. According to [former] Hewlett-Packard Chairman Lewis E. Platt, "I don't create business strategies. My role is to encourage discussion of the white spaces, the overlap and gaps among business strategies, the important areas that are not addressed by the strategies of individual HP businesses." Other times it is as simple as listening to people and letting them know how to reach you when they need help. UUNET's CEO rejected the idea of a security door to the executive suites because he wanted employees to be able to visit him anytime. Jerry Kalov, CEO of Cobra Electronics, has a phone extension that is not screened by anyone, and it is given only to employees.

6 Choose the measures on which to focus.

What does your organization measure most carefully? Many companies spend an inordinate amount of time developing and studying traditional financial measures. Yet, according to The Conference Board's research director for corporate governance and strategy, traditional measures do not capture key business changes until it is too late. They reflect divisional, not cross-functional, processes within a company; and often

they fail to cope with hard-to-quantify assets such as intellectual capital.

Too often leaders forget that financial numbers are an abstraction, not reality. Furthermore, they often give an illusion of precision. They also are historical and can blind leaders to future changes. When American Express was experiencing a competitive crisis in the early 1990s, one of its executives commented, "Our return on equity had been in excess of 20 percent a year for decades. The attitude was, 'Who can argue with those numbers?'"

I find that a rapidly changing landscape requires organizations to have simple measures. Leaders at companies such as Microsoft and GE certainly support this view. I like Welch's: According to him, "Too often we measure everything and understand nothing. The three most important things you need to measure in a business are customer satisfaction, employee satisfaction and cash flow."

I do not mean to suggest that traditional financial measures are unimportant. They may not be particularly helpful in leading the organization, but they are very important to outsiders.

7 Communicate a direction.

An organization needs to have a clear direction. A key role for any leader, but especially the CEO of a large, established organization, is to be able to articulate the business direction and goals clearly to interested parties, both internal and external to the organization.

This ability to communicate a clear direction is essential at all levels of leadership, even at the level of project leader. According to Pamela Lopker, the president of QAD, a developer and supplier of integrated business software and services, "I've never had a project completed successfully where someone couldn't articulate what they were doing." She adds, "If someone can't explain to me what they are doing very simply, and show me milestones between now and when they finish it, I just don't believe them."

At Sony in the late 1980s, Akio Morita, chairman and cofounder of Sony, saw one of his roles as being the company philosopher. He believed that, particularly in a highly technical enterprise, philosophy was needed to place technical developments within the entire texture of modern social existence: "The philosopher must see technology in its human context so as to guide the aims of engineering."

Ideally, leaders should go beyond just helping people understand the direction, whether it is the overall business direction or the technology direction. They should help others in the organization understand what is happening around them,

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for example, understand their landscape.

Good leaders do not have to be great speakers or even have outgoing personalities. They do, however, have to find a medium whereby they can effectively communicate the message that they think is at the heart of the organization's direction, whether business direction, technology vision or the landscape. They need to actively look for a variety of ways that are effective for them to communicate, both by words and deeds, what the important dimensions of the business are.

The more forums management can hold, the better. According to an employee I interviewed at a telecommunications company, "If you just had one mechanism, somebody would miss that meeting or they would miss that channel of communication, so I think redundancy is important." Because his organization utilized numerous forums, he didn't "hear a

more, difficult decisions will have to be made faster and with less information than most leaders would like. Over the years I have had the experience of using case studies with various groups of MBAs and executives. In virtually every group there are people who say, "I can't make a decision about this case because I don't have enough information." Business leaders on rugged landscapes never have all the information they would like to have. Yet for their companies to be successful they have to make big decisions and increasingly do it quickly.

There are some significant advantages to rapid decision making. For one, you are more likely to stay ahead of the competition. Intel's new president and CEO, Craig Barrett, while acknowledging the risks associated with spending billions of dollars on new chip plants, stresses, "If we didn't we couldn't possibly reap the benefits. The worst thing we can do is stop too soon and let someone else pass us."

Marc Andreessen, formerly the CTO of Netscape, sees another advantage: "One of the advantages of moving quickly is if you do something wrong you can change it. What technologies tend to do is they tend to make a lot of mistakes, but then we go back and aggressively attack those mistakes—and fix



Often the true test of a leader is what happens after he or she leaves the organization.

lot of complaints from people [complaints such as], 'Hey, I didn't hear about that.'"

Employees come and go, people forget and circumstances change. If the direction is not communicated clearly and often, people in the organization will get lost in fairly short order.

8 Be decisive.

Debate and study have to lead to action. I was impressed with advice given to Frederick Smith, the CEO of Federal Express, when he was serving in Vietnam. A sergeant reportedly told him, "Lieutenant, there are only three things you gotta remember: shoot, move and communicate." For me, one interesting aspect of this advice is that survival begins with action. Decisions have to be made before things start to happen.

Many business writers and leaders have explored the importance of values in a modern organization. A clearly understood set of values is vital to an organization on a rugged landscape. When surrounded by great uncertainty, people find it very helpful to know what the organization believes in, even if they do not always know what the next actions will be. Articulated values are meaningless, however, unless they are consistently reflected in hard decisions.

On rugged landscapes leaders have to be decisive. More and

them. And you usually recover pretty quickly."

This willingness to make quick decisions and then improve on them needs to be found not only at the top of the organization but throughout. Several years ago, I had the opportunity to spend some time with managers and executives of a successful supplier to the automobile industry that had implemented a quality program that had dramatically improved the company's performance on many dimensions, including financial. When a plant manager was asked about his role, he talked about the importance of being willing to make a decision and move on: "Keep the parade moving—don't stand there and do nothing. Even if you don't know what impact the move is going to make, record it, let people know what is going to happen and march on." As he acknowledged, if it turns out that there are problems with the decision, correct them as best you can and move ahead.

9 Prepare a successor.

Often the true test of a leader is what happens after he or she leaves the organization. Too few leaders seem willing to take the time to prepare either the successor or the organization to accept the successor.

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seemed to go so smoothly that little public notice was taken. When in April 1998 Grove announced he no longer would serve as CEO and promoted Intel's president to the job, the stock market hardly responded. When John Morgridge, CEO of Cisco Systems, surprised his board by announcing his intention to retire, he recommended his replacement—John Chambers. According to the retiring CEO, “When Chambers took over, Cisco never lost a beat. That’s how the company was able to stay ahead.”

There are reports that Welch spends more than 30 percent of his time on questions of GE management development and has his company spending approximately \$800 million a year on training and leadership development—almost half of what it spends on R&D. In recent years he has described the issue of succession as an obsession for him. “It’s on my mind constantly. Finding the right person is the most important thing I can do for the company.” One of the things that often seems to characterize leaders of fit orga-

energy, you feel you should ground yourself before you touch him.” It is similar to descriptions I have heard applied to the leadership of leading technology companies. For example, according to *Fortune*, Chambers of Cisco “is in overdrive all the time, on a sales call that never ends.” HP’s new president and CEO, Carleton Fiorina, has been described by her predecessor as having energy and sparkle that cannot help but be noticed.

In my opinion, Jack Welch personifies many of the qualities that will be needed in the CEO of a large corporation in the early part of the 21st century. With all of the changes and the impressive performance that Welch brought about at GE in the first few years of his tenure, when asked, with hindsight, what would he have done differently, like Grove, he emphasized speed of action—“move faster.”

“In hindsight,” he added, “if there’s a criticism [at GE], it was too evolutionary. It was perceived on the outside as revolutionary, but if you want to criticize what the hell went

wrong, I didn’t do it fast enough.... It took us a decade to do a lot of the things we had to do.”

Welch, too, talks about always being scared. He also talks about the importance of being “on the lunatic fringe” and coming to work every day on the razor’s edge. He seems to use that sense of fear to energize himself and others. He even speaks of his

role as being an energizer. He believes, “You’ve got to be live action all day. And you’ve got to be able to energize others.” He also wants his managers to be the same way: “They have to have enormous energy and the incredible ability to energize others. If you can’t energize others, you can’t be a leader.”

Successful leaders of large organizations operating on rugged landscapes rarely will be the traditional lone figure, single-handedly making the difference. Rather, they will be catalysts or facilitators who can speed up reactions or influence the interactions of others so that growth can occur. Leaders who play this role have, I believe, a far better chance of helping their organizations adapt to a rapidly changing world. The 10 activities discussed in this chapter are some of the most important ways that leaders of large, complex organizations can help shape an adaptive organization. **CIO**



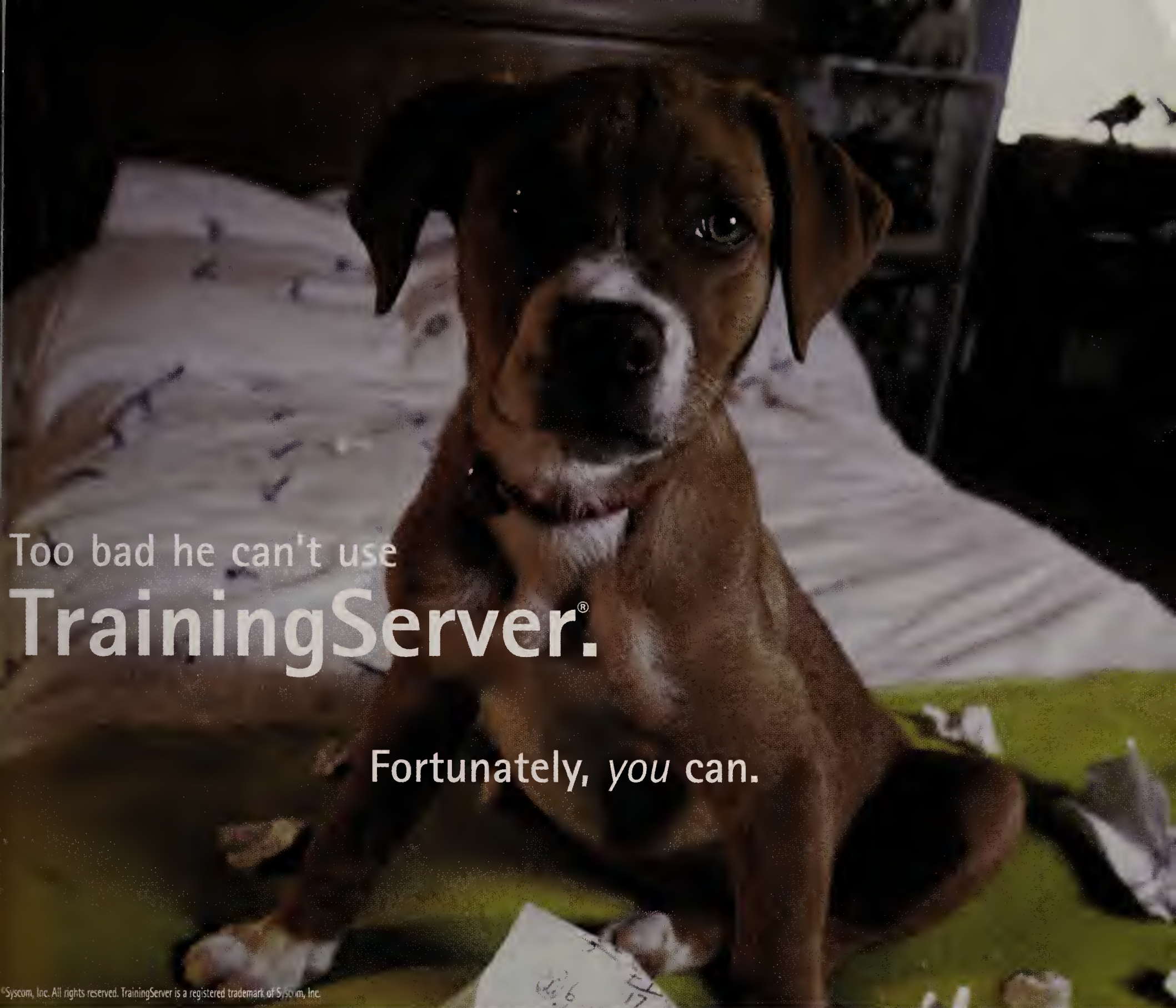
More CEOs need to devote their time to trying to understand the landscape on which their organizations operate.

nizations on rugged landscapes is that they do not choose successors in their own image. It is hard to imagine two CEOs more different in personality, style and background than Reg Jones and Jack Welch. Intel’s new CEO is described as a laconic metallurgist whereas Grove was described as “Mr. High-Output Management.” Sony’s new president was a marketing executive and is viewed as more of a software person than a hardware person—the first such candidate in Sony’s history to lead the company. He sees himself as totally different from his predecessor. Strong leaders seem to choose their successor for his or her perceived ability to deal with the emerging landscape.

10 Act with urgency and energy.

On a rugged landscape, leaders have to convey an almost constant sense of urgency. This usually requires a high level of energy. I was struck by an analyst’s description of Juergen Schrempp, cochairman of DaimlerChrysler: “He is so full of

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inside

**Not sure how to work with your sales
and marketing departments? Learn to
speak the language of your colleagues.**

BY STEWART DECK

Lori Thompson is frustrated with contact management software. It's not that Thompson, the senior vice president of sales at the Keds division of Stride Rite Corp., doesn't recognize the importance of organizing sales calls and client data. It's just this: The fact that her IT department made it available shows its lack of understanding about what salespeople and marketers really need to do their jobs.

Her beef with the software? It's designed for someone who sits at a desk and makes phone calls—the last thing she wants her salespeople to do. “I want my salespeople sitting in front of another person making a sale,” she says. And they can't use a laptop-based contact manager to do that. So Thompson gets a bit antsy when she hears rumblings from the IT department about how much more efficient her sales folks could be if they put the software to work.

Learn

- ▶ Sales and marketing's basic concerns
- ▶ How technology is changing the marketing landscape
- ▶ Why salespeople make good party guests

sales

Thompson's reproach may seem small by itself, but it's symbolic of a common discord between sales and marketing and IT that can put a company at a competitive disadvantage. To add value to and support what marketing departments are trying to do, CIOs need to be able to speak their lingo, have some insight into their key issues and realize where the culture of IT and the culture of sales and marketing diverge.

Show Me the Numbers

So what do marketing people want, anyway? The short answer: data, and lots of it. "Every marketer's first order of business is cultivating customers, which needs to be understood philosophically by the technology side," says Jonathan Ward, chairman and chief marketing officer of Business Communication Research Institute, a marketing think tank based in Denver. But sales and marketing people themselves don't always know how best to measure this customer cultivation or analyze the data they're collecting. "Because most marketing people aren't adept at managing data at a technical level, they desperately need help from IT," says Ward. In some companies, he adds,

can turn these core concerns into concrete numbers. Improving customer service might mean paying particular attention to call center technology or planning customer relationship management setups. Marketers know what they're looking for, but without the CIO's team on their side they don't always get it.

ROI. Measuring return on investment is as important to sales and marketing as it is to just about every other part of a business. To track and measure customers' ongoing buying patterns, marketers may require sales data, foot or website traffic figures, average order size and data on how those numbers change over time and with advertising expenditures. Lori Thompson of Keds, for example, requires measurements of a full range of pricing, styles, advertising promotions and market timing to determine how her marketing investments are paying off.

For e-retailers, measuring ROI can involve tracking where site visitors come from and how they navigate through a site. "We have to

Hear Me Out: Keds Senior VP of Sales Lori Thompson wants IT to understand how her department operates.



marketers fail to gain support from other departments when they speak in generalities rather than hard numbers. Ward says it is essential for the IT department to ask about and be involved in a company's fundamental sales and marketing philosophies so that it can help guide technology decisions. By missing out on this planning step, IT may get stuck continually retrofitting measurement and data collection systems.

The customer is king. Sales and marketing's focus is the customer experience—what they see and hear and respond to—so tracking customers' behavior and movements from their initial contact with the company all the way through to completing a sale is paramount. IT staffers, used to concentrating on the internal customer, should turn their gaze outward and see things through the marketing lens.

"The core topics for sales and marketers are delivering outstanding customer service, promoting customer service and generating profits," says Ginger Conlon, managing editor of *Sales & Marketing Management* magazine in New York City. And although these topics seem as if they're firmly planted in marketing's corner, IT departments play a crucial role in designing and implementing systems that

MARKETING GLOSSARY

Customer A website browser or store visitor; an identified prospect or a purchaser

Sales Each single goods transaction or all transactions as a group

Promotion All ads, flyers, banners, mailings—these can be lumped together ("The Spring Promotion") or separated into individual lines ("The Midwest Books Promotion")

Channels Venues through which your product is sold: telemarketing, business sales forces, resellers, strategic alliances, and retail and online stores

Customer yield The measurement of the number of visits it takes to turn a browser into a customer

Campaign Direct mail, e-mail, store displays and any other periodic methods used to pump up interest in a product

Activity-based costing Looking at how customers behave to figure out who are the most profitable



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be able to see how often people are visiting, follow what they're doing and how they make purchases," says Dionn Schaffner, vice president of marketing at Garden.com, an online gardening store and resource based in Austin, Texas. "One specific marketing campaign may not pay for itself, but if we acquire and retain a customer, we can count that as a success."

Marketing channels. Because the venues through which a company sells its products change depending on the target customer, marketers have to develop strategies for each channel. Robin Bayless, the advertising and promotions manager at Heavenly Ham, the 188-store

Now, Please: *Marketing expert Jonathan Ward says marketers shoot from the hip and want answers yesterday.*

franchise owned by Roswell, Ga.-based Paradise Foods, has to keep an eye on regular newspaper advertising, radio and TV promotions, and coupons given to repeat customers so that she can track who is responding to each type of offer, where the responses are coming from and where the company might be wasting its marketing dollars.

Online retailers may have fewer sales channels than brick-and-mortar stores, but they have just as many marketing opportunities. Garden.com uses its own magazine and catalog, TV ads, radio spots, online banner ads, direct mail outreach and e-mail address swaps to drive traffic to its site. It has also begun partnering with other websites including Excite.com and iVillage to provide online gardening centers for them. Schaffner wants to be able to track as many of these outlets as possible and works with her site design team to capture where cus-



PHOTO BY STEVEN VOTES

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A portrait of Deepak Abbhi, a man with dark hair, a mustache, and glasses, wearing a blue button-down shirt. He is looking directly at the camera with a slight smile.

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Marketing 101

tomers have come from, using cookies and site tagging for online data and customer questionnaires and surveys to gain feedback about offline advertising. For each of these channels the brand has to be consistent, so at Garden.com the website design team is part of marketing instead of IT. "This helps us signify the importance of marketing to the rest of the company and makes it easier from an organizational point of view for us to express what we need," says Schaffner.

Sponsorships. CIOs don't always understand that to a marketer there's no point having a brand name if you can't find places to display it. Marketers have to make sure their technology cohorts are in the loop with large marketing sponsorships so that websites, retail systems and call centers can prepare for increased traffic. CarsDirect.com knows plenty about that. In March the Los Angeles-based online car retailer sponsored a Nascar auto race in Las Vegas and began shaping its plans with IT before the race was even announced. "We wanted our website to reflect the sponsorship and offer fans plenty of information about the upcoming race right on our site," says Donna Miller, director of marketing at CarsDirect.com. Miller's marketing group worked on teams with site designers to build a microsite on its main site just for the race. At the same time, the group determined what kind of site traffic increases they anticipated so that the CIO's team could have load balancing and bandwidth increases in place on race day.

Marketing's Changing Face

The wants and needs of sales and marketing are hardly static. And as companies continue to turn their focus toward e-commerce, marketing will bear the brunt of the responsibility for developing and implementing e-business strategies that don't alienate business partners. For such businesses as clothing manufacturers, electronics builders and automakers, keeping retail partners happy while building an online presence can be a daily tightrope walk. At Keds, Thompson's group is in charge of developing strategies to achieve a balance between offering goods straight to online consumers and to Keds' established brick-and-mortar partners, which don't want to lose sales to a website. CIOs need to be aware of this trouble spot so that they don't blindly push technology and strategy ("Let's sell all our goods ourselves online!") that will damage retail partnerships. CIOs can also help marketers formulate their online strategies by showing how other manufacturers use extranets to offer retail partners closer ties to the parent company.

And while customer relationship management may sound like a topic for the technologists, marketing departments look at CRM from a whole different angle. For marketing people, the success of CRM projects doesn't hinge on how smoothly applications work but how they pay off in developing and retaining bonds with customers. Seth Godin, vice president of direct marketing at Yahoo and

Don't Ask, Just Tell: *CarsDirect.com Director of Marketing Donna Miller admits to requesting information that puzzles her IT department.*



PHOTO BY KAREN MILLER

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author of *Permission Marketing* (see “Now Read This,” Page 224), says CRM is how a company “turns strangers into friends.” The data that CRM captures—customer profiles, sales history, life cycle, customer retention data and cross-selling stats—is crucial to making a technology spell success on the marketing side.

Who knows what acronym will hit the marketing department next, but you can bet IT and marketing will need to get together to make it work. “A few years ago, sales automation systems were the rage, but many of them flopped” because marketers didn’t foresee how much they would have to change their tried-and-true methods, recalls Ward. “Sales automation sounded like a good new idea, so [the salespeople] asked to bring it in,” he says. But once implementation began, salespeople balked at dumping their old ways.

Now What Do You Want?

So how do you help sales and marketing get what it needs? Support issues make up one of the trickiest parts of the relationship. Just as CIOs need to set policies and guidelines for supporting each department, they need to be able to prioritize and understand requests.

And understanding when and why marketers want specific information is the key to giving them the right amount. When CarsDirect.com’s Miller decided the website needed better tags to track site

traffic patterns, she sat down early on with the IT department to make sure they understood online ad serving and why marketing needed to be able to follow a site visitor’s movements. Now Miller’s marketing team gets data about its banner ads, and it’s her group’s responsibility to help IT see how they can best optimize site information.

“The CIO should sit down with the head of marketing and ask, ‘What do you really need, and in the end what do we as a company want to know?’” says Ward. Such conversations may reveal the need for a more detailed communications strategy that weaves telephony, website and internal business systems together. One conversation likely won’t cover everything, so setting up cross-functional teams and business architects is a good way to address ongoing issues, says Garden.com’s Schaffner.

Such teams have helped Miller explain to her CIO why she was requesting unusually timed profiles of website traffic. “We asked for hourly breakdowns for different times of the day,” Miller explains, “and our request didn’t make sense to [the IT group] initially.” What was wrong with the daily quotes they had been getting all along? asked the IT group. After the team meeting, the IT department understood that seeing the site patterns throughout a normal business day allowed marketing to customize its ad campaigns.

When Introverts and Extroverts Collide

But even when IT and sales and marketing understand each other on a business level, some crucial personality differences can come into play.

Not Just for Data Anymore: *Technology helps Yahoo VP of Direct Marketing Seth Godin put a face on his customers.*



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Allowing for some generalization, sales and marketing people as a group are often more gregarious and louder than their cohorts on the IT side. Oh yes, and they want answers yesterday. "Marketers like to play with ideas, make things happen and talk to someone about it. They're information people who want to know what's going on, and they freak out when they're unconnected," says Ward. "They shoot from the hip, they work fast and loose, and they're used to doing things themselves and taking care of crises."

Technologists are usually much more deliberate, sometimes frustratingly so for sales and marketers. Heavenly Ham's Bayless says she often senses this difference when she calls her help desk. "I just want to know what's wrong with my computer or how long the system will be down, and it seems like they always want to explain to me how a computer works. I just don't have time for that."

But despite their seeming confidence, many marketers confess a secret admiration for the work of their IT colleagues. "Marketers see IT people as respected priests who have amazing powers," says Ward.

Marketers also feel like they are sometimes the middlemen or the peacemakers between customers and the business, and that can be both a blessing and a curse. As president and COO at Heavenly Ham, Bucky Cook oversees the company's marketing programs and

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By Jay Conrad Levinson, Houghton Mifflin Co., 1998

Marketing Management: Analysis, Planning, Implementation, and Control

By Philip Kotler, Prentice Hall, 9th edition, 1999

The Marketing Paradigm: A Guide for General Managers

By Paul M. Messinger, NTC Business Books, 1994

Permission Marketing: Turning Strangers into Friends, and Friends into Customers

By Seth Godin, Simon & Schuster, 1999

Secret Formulas of the Wizard of Ads

By Roy H. Williams, Bard Press, 1999

The Strategy Process: Concepts, Context and Cases

By Henry Mintzberg and James Brian Quinn, Prentice Hall, 1995



Just Fix It: Robin Bayless, advertising manager at Heavenly Ham, doesn't need to know how her computer works, just how it can work for her.

knows marketing's role from ribs to tail. "We have to be all things to lots of people and act almost as United Nations peacemakers sometimes," Cook says. When franchise stores have questions about anything from advertising promotions to store layout they call marketing. When customers have a complaint, marketing takes the call.

But as e-commerce becomes a bigger deal to many companies, customary boundaries between marketing and IT are starting to dissolve. "In traditional companies some marketing people don't even like to turn on their computers, but in e-commerce I think you're starting to see more of a blending of backgrounds, and cultural differences aren't quite as big," says CarsDirect's Miller.

Garden.com's Schaffner concurs. In fact, Schaffner says, Garden.com's chief marketing officer comes from a technology background, and Schaffner herself has a bachelor's degree in computer science, not marketing.

You don't have to make a sales call or start a marketing campaign to see how these folks operate. Just sit at their desks and walk a few steps in their shoes. Talk to them, and talk about the issues they deal with every day. The best way to understand sales and marketing, says Heavenly Hams' Cook, is to stay customer focused. "We spend most of our days thinking, 'How will this affect the customer?' By keeping this in mind you'll understand us." **CIO**

Got a marketing horror or success story to share? Let Staff Writer Stewart Deck know at sdeck@cio.com.

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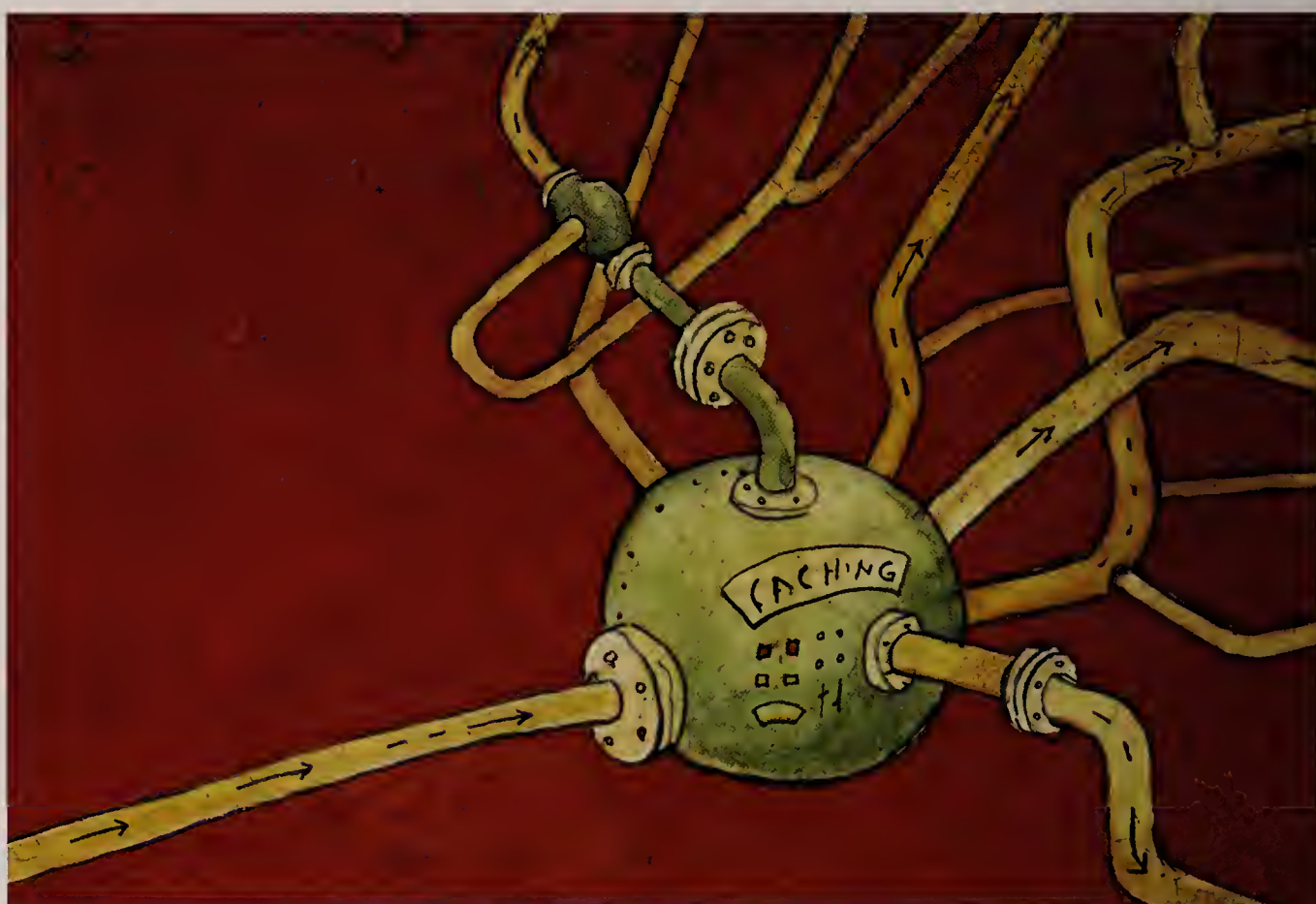

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Millions of Hits Served

*Web caching products can improve performance and reduce costs—
but only if you know how to use them* BY SHARI WEISS

*Edited by Chris Lindquist
and Sari Kalin. Send your
thoughts and ideas for future
columns to et@cio.com.*

DELTA AIR LINES watched the load on its web servers and firewalls surge. Recently added site-personalization features eliminated static webpages in favor of fresh, dynamically created content—but they also put the company's network infrastructure into overdrive.

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which browsers can retrieve the pages multiple times—without increasing server loads. The results have been dramatic; the cache currently handles some 92 percent of the site's page requests.

Easing the server's life wasn't the only benefit. The cache also lives outside the corporate firewall, which helps cut back on the traffic through the com-

Efficiency Expert

Implemented properly, caching makes more efficient use of local bandwidth, is less expensive than WAN bandwidth and reduces overall network infrastructure needs—benefits that should appeal to every CIO.

But while today's IT managers are likely to know about web caching from the hype

The results have been dramatic; the cache currently handles some 92 percent of the site's page requests.

pany's security systems. The overall reduction in load eliminated Delta's need to purchase additional servers and firewalls, cutting overall equipment costs while simultaneously simplifying support. "Our return on investment was instantaneous," says Mark Kraieski, director of electronic commerce services for Delta.

Put simply, caching is the temporary storage of web objects (such as HTML pages) for later retrieval. External caching applications—such as Delta's—provide faster response times to end users and reduce internal server loads. IT departments can also deploy caching on an organization's intranet to accelerate performance and reduce bandwidth requirements for both internal and external sites.

The technology works. And according to a 1999 report by the Internet Research Group, cache usage is evolving rapidly in hosting environments such as internet service providers and web hosts. The real potential, however, lies in the enterprise segment, which the report's author—analyst Peter Christy—claims will represent two-thirds of the market by 2001.

generated on Wall Street by caching start-ups, many companies are not taking full advantage of this technology to solve their network challenges, says Greg Howard, principal analyst at The HTRC Group.

Part of the problem is that some companies get their caches more by serendipity than by selection. Many enterprise customers often see caching capabilities as a bonus that comes with some other product, such as a firewall or proxy server, says Christy. If the product makes a noticeable improvement and doesn't cause problems, he says, customers are happy and go on to other, noncaching issues without fully appreciating the technology's potential.

Product selection is critical, however, because caching implementation strategy depends on the problem to be solved, Howard says. For instance, if the issue is a flood of HTTP traffic in-

side an organization that is drowning the current network, then client-side caching is appropriate. Deploying caches close to users and allowing those caches to handle web requests both cuts response times and saves network bandwidth.

When the issue is how to accelerate content to a target customer base outside



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The Small Screen

One of the hurdles to rolling out web applications on cell phones, PDAs and other internet appliances is translating existing web data and applications into a format that can be viewed on the devices' tiny screens. Enter **IBM's WebSphere Transcoding Publisher**, software that dynamically translates (or transcodes) web text, images and other information into a format that internet appliances understand. Data and applications written in HTML and XML can be converted to wireless markup language (WML) and other formats; graphics can be converted to formats that are viewable on the device at hand or to a hyperlink. The server-side software is priced at \$20,000 per server. For more information, call 800 426-4968 or visit www-4.ibm.com/software/web servers/transcoding.

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corporate walls, then server-side caching is often the best approach. In this case, the cache acts as a front end for the server farm and handles all inbound requests. Commonly requested objects, catalog

structures are just not adequate to handle the increasing loads on their systems," he says. "Caching is all about taking data and reducing the amount that has to go back and forth."

Make sure that sensitive information—such as credit card numbers or proprietary corporate data—doesn't end up stranded in the open on an improperly configured cache.

pages, for instance, go directly to the browser from the cache, while live transactions, such as sales requests, pass to the back-end servers. Simply using the cache that came with your firewall or other network component might work fine—but it might not be the best choice.

A cache used badly may also introduce additional complexities to an already complex network. Pages can go stale if the cache doesn't refresh content from the source servers frequently enough, for instance. And inaccurate data delivered quickly will not solve anyone's problem, says Greg Govatos, marketing director at CacheFlow, which manufactures the appliances used by Delta. Companies must also be careful to optimize caches so that users get sent to the proper ones. And IT departments must make sure that sensitive information—such as credit card numbers or proprietary corporate data—doesn't end up stranded in the open on an improperly configured cache.

Cache Rich

But not every IT exec is cache-ignorant. For instance, John Puckett, CIO of ToySmart.com, got the task of building the online toy vendor's network from scratch—in less than a year. And caching has become a critical part of the job. "Organizational infra-

Puckett's company has tried different approaches to caching over the last few months and has now adopted a multitier, phased-in strategy. "Currently we are implementing a redesign of our caching solutions utilizing local caching servers as well as switching equipment to manage the traffic to and from the cache."

ToySmart's next phase will extend it into enterprise-level caching through services like Akamai, a company that provides businesses with high-performance delivery of rich web content and internet applications via distributed caching servers. (Akamai recently helped handle the flood of requests for FoxSports.com's Superbowl coverage and the October 1999 NetAid online benefit concert.) "This [phased] strategy will flush out technical issues with our site architecture and ensure that we are scaling a solution that works," Puckett says. "We did not want to be resolving problems in a large distributed environment until we fully understood all of the technical issues."

The Power of Cache

Standard e-commerce transactions and webpages can be reason enough for caching. More advanced content—such as streaming audio and video—only increase the need.

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access control, e-mail and Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) server functionality. Options include VPN functionality and e-mail archiving. The system is administered via a web-based interface. Prices range from \$3,400 to \$7,100, depending on net access bandwidth. For more information, visit www.netwolves.com or call 813 286-8644.

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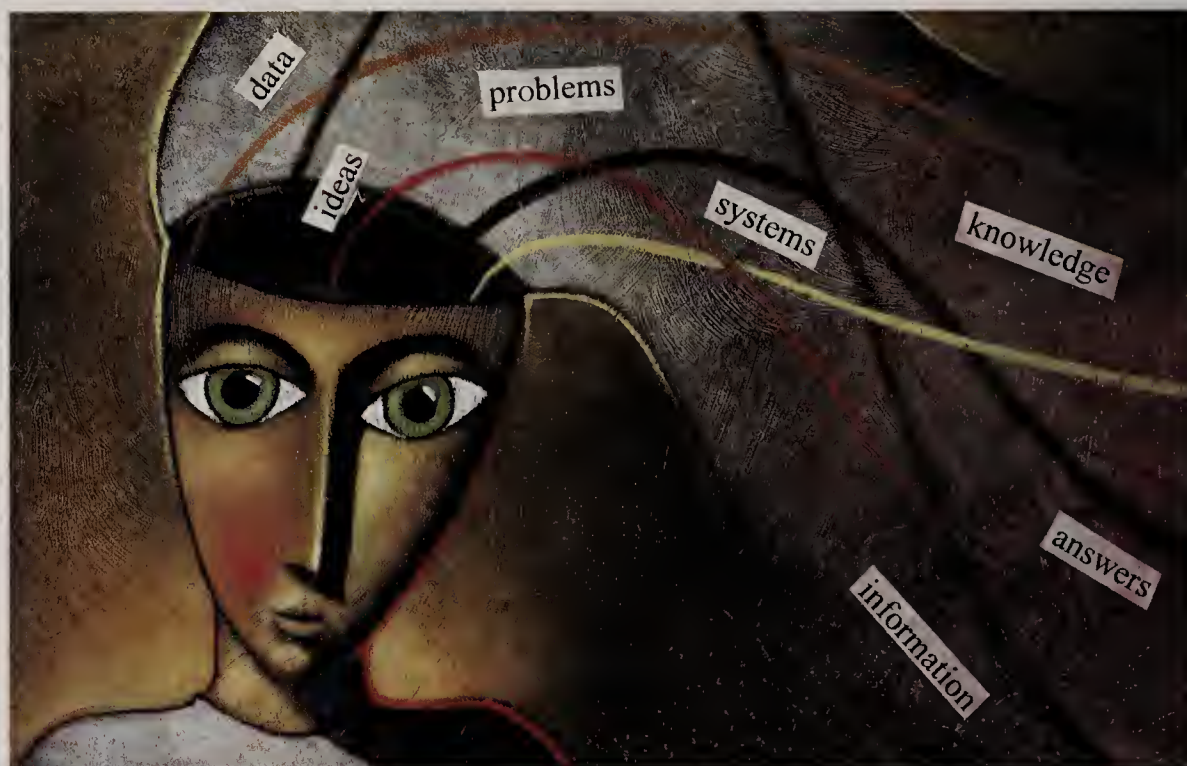
Streaming media delivery becomes a problem when multiple end users try to access the same content at the same time. Typically, each user then receives a stream from the origin server, resulting in unnecessary congestion of both the server and the network. By using a cache, the server can send a single stream, with the cache—or caches—redistributing it to individuals, thus freeing server and network bandwidth for other activities.

When Merrill Lynch was looking for a cost-effective solution to speed the delivery of critical intranet content—including streaming media—to its international branch offices, it found caches ready to help. By deploying a caching appliance in each of the branches, the organization improved response times for the users while simultaneously saving on the high costs of international bandwidth, according to Peter Danka, vice president of international private client architecture at Merrill Lynch.

And if caching is important now, it will be critical in the near future. Within three years, most new software will be delivered as an internet-based service, according to Christy. “Any CIO who isn’t trying to fully understand internet-based software solutions probably needs to retire early,” he says, adding that caching will play a fundamental role in maintaining the performance benefits of distributed computing.

But even while analysts promote caching as the wave of the future, it shouldn’t be taken lightly, warns ToySmart’s Puckett. “In our quest to improve performance and reduce costs, we must ensure that we don’t neglect scalability and, even more important, security,” he says. “[Caching] is an area where CIOs need to be careful to not shoot themselves in the foot.”

Is your website cache rich or cache poor? Tell Technology Editor Chris Lindquist about it at et@cio.com. Shari Weiss, an Oakland, Calif.-based freelance writer, can be reached at sharisax@aol.com.



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Embedded Logic

Overhyped, then much maligned, expert systems find their niche inside web applications **BY FRED HAPGOOD**

IN THE MID-'80S a technology appeared with a striking marketing story: a product that promised to capture the expertise of skilled humans and then codify that expertise into a program. Transformed into such a program (so to speak), an expert would be continuously available and ubiquitously deployable, even if he or she had long since left the company.

The defining property of these so-called expert systems was that they made it easy to define, express, monitor and alter sets of rules associating inputs with outputs. (Ordinary programs, by contrast, tended to bury these rules deep within the code.) A programmer would interview an expert, present various possibilities and code up his or her solutions as a set of if/then rules. Thereafter a user entering an “if” condition would be shown the action that the expert would have taken in that situation.

Despite a huge hype attack by the media, the first five years of the expert system busi-

ness were lean ones. According to an article published by *CIO* in December 1990, the problem was that these early systems were used to address overly complex business problems, were incompatible with the rest of the corporate computing environment and required their own experts to operate them. Where was the logic in dispensing with the need for one expert by acquiring a need for another?

At the time, we were much more enthusiastic about the prospects for a simpler and more modest generation of expert systems appearing on the market. These new systems were being used for highly defined applications addressing everyday issues like credit verification, underwriting approvals, resource scheduling and network diagnostics. According to the article, the payback periods were measured in months or less.

Nonetheless, the adoption curve of the technology stayed modest. According to Nalini Elkins, CTO and cofounder of

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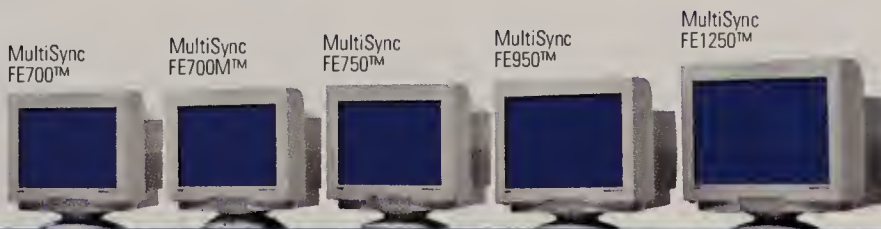
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Applied Expert Systems, a network management tools vendor, one problem was the name. "If you called something an expert system, people's expectations rose. Companies would try it out on their toughest problem and usually the program would fail." Vendors could not just scale up the intelligence of their products, since programs that can deal with every situation take forever to build. Elkins says that as a practical matter, expert systems are best suited for routine cases; tougher problems should be kicked "upstairs" to human beings. "We talked a lot about how we could rename the technology," said Ulf

pert systems can personalize inquiries to the nth degree," says Loofborrow, whose systems let employees explore their benefits policies on the web. Akeel Al-Attar, of Attar Systems, thinks expert systems are a natural support system for e-commerce, since consumer "interviews" are rule bound and require much back and forth with corporate databases. He gives as an example a Japanese pump manufacturer and Attar Systems customer, Ebara Manufacturing, that produces several thousand kinds of pumps for many industries. Traditionally, customers would just ask for a pump. Sales personnel had to figure out what kind.

Expert systems are best suited for routine cases; tougher problems should be kicked "upstairs" to human beings.

Strom, CEO of Design Power, a company that uses expert systems to design work processes and mechanical and chemical engineering processes.

A second problem, according to Tod Loofborrow, president and CEO of Authoria, an expert systems development house specializing in human resources and health-care information, was that functions like credit verification required high levels of interoperability with other corporate information. Years of work were needed to achieve compatibility.

During the last decade, expert systems have become so integrated that they have turned into parts of processes. Vendors continue to sell them embedded into various products but seldom mention their presence. Programs are sold based on their functionality for a given application, not on whether they are "expert" or not. The new robot mind became part of the plumbing.

This self-effacement may have delivered them to their true role, that of web-based interfaces to corporate data resources. "Ex-

As products got more numerous and sophisticated, this manual system started to break down. Ebara fixed this problem with an online expert system. The system brings customers through a series of questions that connect their needs to specific products, often in less than a minute.

Al-Attar points out a subtle edge enjoyed by this new generation of outward-facing expert systems. One reason why the programs *CIO* wrote about 10 years ago did not enjoy the success we expected, he suggests, was that they were internal systems; all they did was reduce costs. E-commerce applications bring in revenue. While it might be true that a saved dollar contains the same number of pennies as an earned dollar, technologies that make money tend to get front-office attention. In the end, this may prove to be an even better marketing story than capturing the wisdom of experts.

Want to brag about an expert system? Technology Editor Chris Lindquist wants to know (et@cio.com).

new products

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Tired of paying teleconference service bureaus to hook up complex conference calls? **Lucent**

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Conferencing System 1100 offers 192 to 1,152 ports, and pricing starts at \$340,000. Both systems are based on an audioconferencing system from MultiLink, a PictureTel subsidiary. For more information, visit www.lucent.com or call 877 582-2632, Ext. 563.



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PREDICTIONS

e-mail

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IF YOUR organization's e-mail traffic isn't growing exponentially, then you're probably CIO at Luddites Inc. and you don't need to read this. The rest of you are likely seeing huge increases in both the volume and size of electronic messages. Yet according to San Francisco-based Ferris Research, IS departments are underestimating how much network bandwidth and e-mail storage capacity they will need to keep up with the increased e-mail flow. A recent survey of IS departments at 24 organizations found that most expected their message stores to grow by roughly 50 percent over the ensuing 12-month period. But given that new message volume is projected to grow from 60 percent to 80 percent during that time, message sizes will likely double or triple, and users are loathe to delete old messages. IS departments should



really be planning for a 100 percent to 150 percent increase in storage and a three- to fivefold increase in WAN bandwidth.

Why are IS department e-mail estimates coming up short? David Ferris, president of Ferris Research, notes that most IS departments don't have adequate tools to monitor and predict e-mail capacity needs; he recommends that they deploy such tools to avoid future surprises. To get a handle on old e-mail storage, Ferris recommends using tools to manage, archive and delete messages. And the future may offer another solution: During the next five years, Ferris predicts e-mail storage will

gradually become integrated with file storage systems, especially as e-mail becomes used more and more frequently to send and store voice, fax, graphics and other types of files. "It's just crazy to have these two separate hierarchical storage places where everyone is keeping information," Ferris says.

—Sari Kalin

new products

Turning Tables

Static HTML tables can now be brought to life. **InterNetivity** offers a new web-based service called **Databeacon.com** that adds interactivity to HTML tables. The service is based on InterNetivity's Databeacon software, a data analysis and reporting application. Here's how it works: When a website is linked to the Databeacon server (it takes a few lines of HTML to make the link), the server compresses data into the HTML table. The compressed data is sent back to the user in an HTML page, where the data can be sorted, analyzed, exported or printed. There is no charge for the basic service. A monthly \$500 subscription fee lets publishers use secure socket layer (SSL) connections and gives their processing requests priority. The company also offers customization and the ability to host Databeacon.com on other servers, for an extra charge. For more information, visit www.databeacon.com or call 613 729-4480.

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Unplugging Cybercrime

WITH INTERNET terrorists assaulting organizations ranging from NASA to Yahoo, many CIOs wish they could just pull the plug on cybercrime. Now, a new, airtight method of safeguarding internal networks has the potential to turn beleaguered CIOs' wishes into reality.

Unlike firewalls, which filter out unwanted packets or redirect connections, Whale Communications' Air Gap technology physically isolates servers from the internet to keep hackers from getting their hands on critical information. The system uses a nonprogrammable appliance, called

an e-Gap switch, to rapidly switch data in and out of a SCSI-based e-disk that features solid-state memory. The system works something like a fortified checkpoint in which security agents can investigate travelers—some innocent, others terrorists—without the risk of a hidden bomb or other weapon wreaking havoc on the local landscape. In operation, one host writes data onto the e-disk. The switch then quickly disconnects the e-disk from that host and connects it to the other host, which reads the data. The arrangement shuttles information back and forth

between public and local networks without ever connecting the two systems in a way that could expose sensitive information assets.

Elad Baron, cofounder and CEO of Fort Lee, N.J.-based Whale, says Air Gap's strength lies in its total disregard for protocols. "It uses no TCP/IP, no operating system and no physical connection between networks, thus eliminating many of the vulnerabilities with which firewalls have to struggle." He notes that Air Gap allows only a safe, narrow path for specific data or transaction exchanges, thereby preventing any protocol or operating system attack on a user's internal network.

Whale's initial customers, not surprisingly, include e-commerce, financial, insurance and research organizations, as well as several government agencies. But Baron says the technology is suitable for any enterprise that is concerned with network security, particularly organizations that use the internet to link telecommuters and business partners into internal systems. "Companies can place their most sensitive webpages and user password databases behind Air Gap, away from hackers' reach, while still enabling real-time transactions," he says.

A basic system sells for \$43,000, but organizations with a large number of transaction networks will have to install an array of units with load-balancing software in order to prevent throughput degradation. The technology can also be used in conjunction with a firewall to provide an extra layer of security.

Frederick Avolio, president of Avolio Consulting, a computer and network security consulting company located in Lisbon, Md., likes Air Gap's simplicity. "It solves a real problem and does so with elegance," he says.

—John Edwards

An e-Gap switch works something like a fortified checkpoint in which security agents can investigate travelers.



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Difference Engine

The Social Impact of Technology

Mirror, Mirror

The ability to simulate everything we do
has a downside: analysis paralysis

BY MICHAEL SCHRAGE

IN HIS INGENUOUS NOVEL *Einstein's Dreams*, Alan Lightman envisions an imaginary world where everyone lives forever. There is no death. Time is a friend, not an enemy. But the gift of immortality—the prospect of eternal life—completely and utterly polarizes society.

The resulting sociological schism is chillingly captured in the following excerpt from a review by cosmologist John Barrow:

"There are procrastinators who lack all urgency: faced with an eternity ahead of them, there was world enough and time for everything—their motto some word like

mañana, but lacking its sense of urgency. Then, there were others who reacted to unlimited time with hyperactivity because they saw the possibility to do everything. But they did not bargain on the dead hand that held back all progress, stopped the completion of any large project and paralyzed society: the voice of experience.

When every craftsman's father and his father and all his ancestors before him, still lives, then experience ceases



ILLUSTRATION BY MARLENA ZUBER

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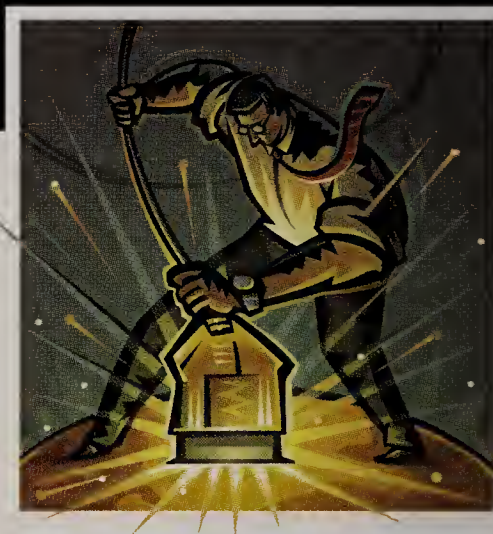
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solely to be of benefit. There is no end to the hierarchy of consultation, to the wealth of experience and to the diversity of alternatives. The land of immortals might well be strewn with unfinished projects, riven by drones and workers with diametrically opposed philosophies of life and choked by choice."

practice, rehearse, simulate, model and rigorously review everything we do. There is a brave new multimedia marketplace for rehearsing reality. We can see ourselves; we can simulate our behaviors before plunging into the real thing. Anyone who has ever watched a videotape of themselves swinging a golf club or practicing interview techniques understands. Everyone

The above passage underscores a fundamental truth: The infinity of potential rarely converges to a consensus. More often, it provokes new intensities of conflict. The immortality scenario described in *Einstein's Dreams* maps perfectly onto the new societies of choice now being built by multiple media technologies. Instead of promising eternal life, these technologies offer another precious gift with infinite possibilities. It's a gift that can dramatically alter the quality, if not the quantity, of human life. It's an opportunity that will transform how individuals and institutions create value. But, like immortality, this is one of those gifts guaranteed to polarize the very people it's designed to benefit.

What is this gift? The ability to quickly, easily and cheaply

Would your significant other be receptive to your hypothetical image modifications of him or would they become a constant point of contention?

who's tracked and reviewed their e-mail correspondence gets it. Technology has become a mirror—call it mirrorware—that gives people the power to see themselves being themselves.

From the rise of VisiCalc to the internet to the emergence of virtual reality, digital media has been on a relentless course to create not just a global information infrastructure but an intimate introspection infrastructure. Digital media lets us not only

who's online?



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How do you authenticate
buyers and sellers online?

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the missing links ...

simulate the consequences of our business decisions with ever-greater fidelity, it allow us to see ourselves making those decisions. We can see ourselves screw up or triumph in virtual versions of reality. We increasingly have the power to digitally rehearse and review practically every management decision of consequence we make. We can simulate hiring and firing; we can rapid prototype with and without key customers and

What we choose not to know about ourselves is ultimately as revealing and important as what we choose to know.

clients. We can model the consequences of a new compensation scheme. We can do it sincerely; we can just go through the motions; or we can choose not to do it at all.

What do the choices we make say about us as individuals? What kinds of cultures emerge from pervasive introspection infrastructures where both individuals and institutions are constantly challenged to simulate and review before doing the real

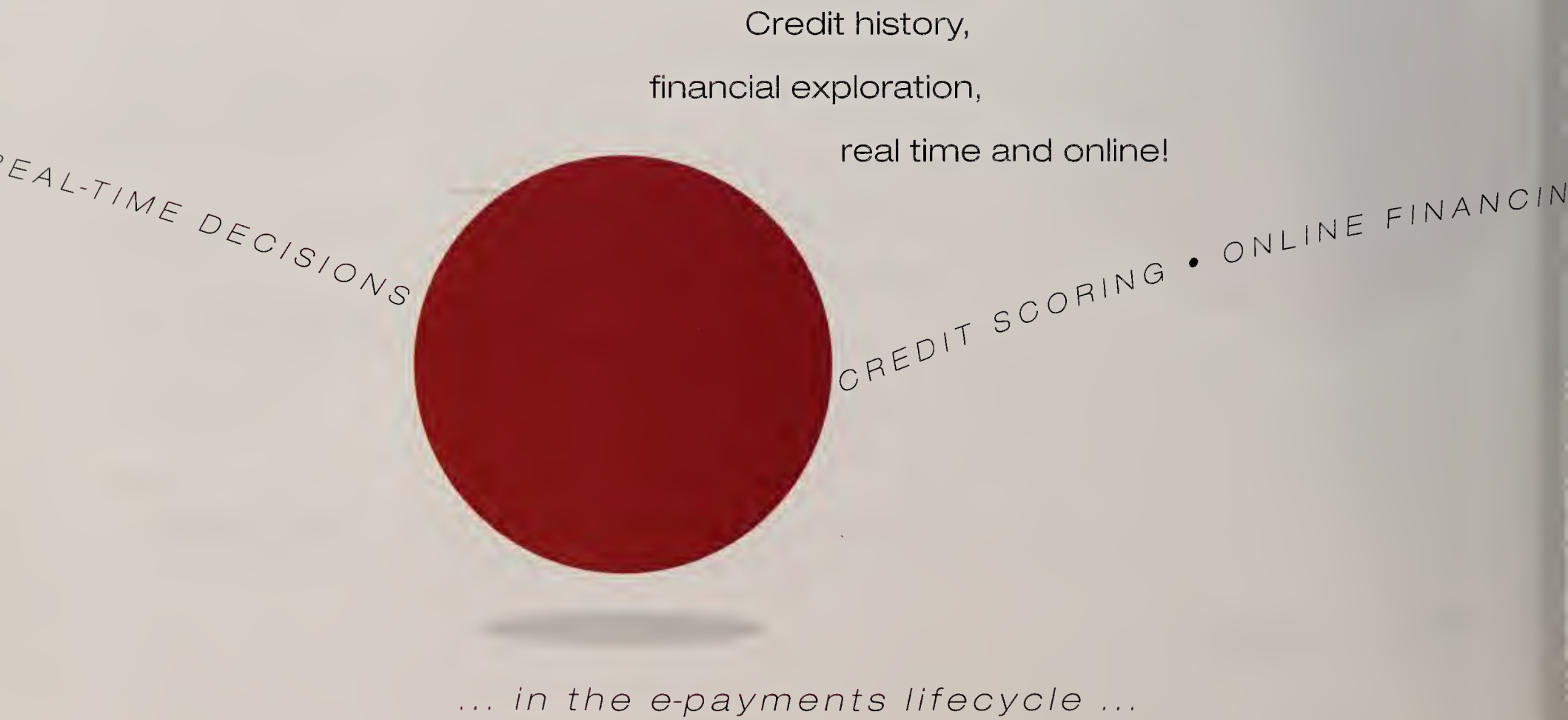
thing? For tomorrow's managers and businesses, there is no more challenging a question.

Image Is Everything

Consider this not-quite-fantastical counterpart: Imagine a smart mirror. Modifications of your mirror image can be made in milliseconds. You can see what you might look like if you lost 10 pounds. If you stopped exercising for two weeks. If you jogged every day. If you lifted weights. If you swam. You could see what you might look like with a tan. You could see what a nip or a tuck might do for your hips or thighs or jowls. You might zero in on particular body parts, enlarging or contracting them for visual inspection or hypothetical enhancement. You could ask for best case, worst case and most likely case scenarios for various ages.

The mirror's projections aren't perfect, of course. So you can store past predicted images for future comparisons with actual appearance. The mirror's underlying algorithms can be edited to correct for errors. The mirror is designed to make body image management as simple and realistic as possible.

can they pay?



The million-dollar question: How much time would you spend in front of the looking glass? What questions would you ask? What questions would you never ask? How much time would you spend looking at the real you in the mirror versus images of possible you's? How does the image of a possible you alter your management of the real you?

Suppose you have a significant other. He cares deeply for you. He also cares deeply about how you look. Do you take him in front of the mirror? Would you let him see your best possible images? Your worst? Would you encourage him to request specific modifications to your image?

Conversely, would you want to play with the possibilities of your significant other's body imagery? Or might seeing a best-case or worst-case image create a difficult memory for you to manage? Would your significant other be receptive to your hypothetical image modifications of him or would they become a constant point of reference and contention?

The Paralyzing Impact of Self-Knowledge

Now extend the mirrorware metaphor to your workplace, hobbies, family, friends and all the relationships you deem important. What do you choose to simulate? To see? What

will you never, ever choose to simulate or see? What does that say about you?

The Greek philosopher Thales of Miletus once commanded, "Know thyself!" For people and businesses obsessed with self-improvement, mirrorware offers an unprecedented opportunity for self-evaluation. Increasingly, our inefficiencies and ineffectiveness are less a function of our ignorance than our choosing to be ignorant. The ongoing explosion of mirrorware technologies has made self-ignorance as much a choice as self-knowledge. What we choose not to know about ourselves is ultimately as revealing and important as what we choose to know. No doubt, mirrorware will inbreed unhealthy broods of digital narcissists as surely as it fosters cults and cultures of relentless self-improvers. It will be fascinating to see who embraces mirrorware as well as who emphatically rejects it.

Senior-level executives can use mirrorware to seamlessly capture the future challenge of business modeling. They can simulate a hostile merger in virtual reality or the impact of a new product launch. They can rehearse how they might collaborate with a profitable client. Managing the media of management becomes a profoundly different task when executives see themselves and the impact of their decisions in the managerial mirrorware.

what do they want?

Hosting services,

Corporate account

management

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What questions would managers ask? What questions would they avoid? Regardless, all questions slice to the heart of managerial darkness. When mirrors and models are as much about potential as they are about reality, the future is based less on knowledge than on desire.

We could experience precisely the same schisms posed by

Technology is giving us both greater tools and greater opportunities for learning more about what makes us who we are. There should be little doubt that the prospect of greater self-knowledge is every bit as polarizing as the prospect of immortality. There will be no consensus. There will only be the relentless challenge of whether we want to simulate more or less, model more or less and practice more or less. That is a challenge guaranteed to force people to be introspective about just how introspective they want to be.

Isn't it ironic that the internet and all the technologies jacked and hacked into it may have greater impact evolving into a mirror into ourselves than a lens into others? But then, how

well we connect with others is frequently a function of how well—or how poorly—we connect with ourselves. **CIO**

How can CIOs make a difference? Tell us what you think at difference@cio.com. Michael Schrage is codirector of The MIT Media Laboratory's eMarkets Initiative and author of *Serious Play: How the World's Best Companies Simulate to Innovate* (Harvard Business School Press, 2000).

The prospect of greater self-knowledge is every bit as polarizing as the prospect of immortality. There will be no consensus.

Einstein's Dreams—some people and companies might model everything all the time in a relentless effort to manage even the shadows cast by probability and chance. Digitally induced analysis paralysis will set in. Conversely, even larger swaths of individuals and organizations will simply reject the possibilities that just-in-time virtual rehearsals provide, which has its own pitfall: a discouragement of healthy introspection.

We are about to start living the answers to those questions.

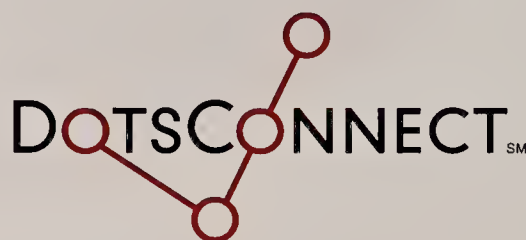
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A new force at work.

Should Management Read Employee E-Mail?

BY MARTHA HELLER

EMPLOYEES OF A payroll processing company in Norfolk, Va., owned by The New York Times Co., recently learned that jokes among friends can have serious consequences. Late last year, management fired 23 employees for e-mailing “inappropriate and offensive” material around the office. Rumor has it that employees were downloading graphic images from pornography sites and e-mailing them to their colleagues.

Days after the firings, Russell Lewis, the president and CEO of *The New York Times*, sent a memo to staffers across the company reminding them that management reserves the right to monitor e-mail and requesting that employees report violations to the HR department.

The New York Times isn't the only company that has grown nervous about employee e-mail abuse. A recent survey by the American Management Association found that the percentage of major U.S. companies that monitor employee e-mails has risen from 15 percent in 1997 to 27 percent in 1999 and that monitoring of all electronic activity (including surfing the web) has jumped from 35 percent to 45 percent.

Most corporate lawyers believe the trend is a good one.



Since employers can be held liable both for the e-mails employees send to one another and for the outbound messages they send, they would be fools, the lawyers argue, not to have monitoring policies and procedures in place.

The lawyer business, however, is not undergoing the staffing crisis that plagues the IT industry. There are some 400,000 open IT positions out there, so organizations are doing their best to lure talented new workers with comfortable, trusting work environments along with high salaries and stock options. With the long hours often demanded of them, workers need to know that they can conduct some personal business, like refilling a prescription online or arranging to visit a marriage counselor, without letting their higher-ups in on their affairs. The condescending “we’re watching you” memos that some companies send to their employees might be enough to push the most valued employees right out the door.

ILLUSTRATION BY TED PITTS



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CIOs are in an especially tough spot. Not only are they attempting to provide their all-too-hirable employees with an affable, respectful work environment, they're often the people responsible for administering the company's surveillance policy. If they follow the advice of corporate counsel and treat their employees like potential criminals, they might find themselves sitting liability-free in a cavernous department that echoes with the sound of only two hands typing.

Are you monitoring e-mail?

Want to sound off on this or other topics? Join the ongoing debates at comment.cio.com.

So what do you think: Should management read employee e-mail? This thread began Dec. 21, 1999, and here is a sampling of the responses that Web Writer Martha Heller received. You can respond to her at mbheller@cio.com or via the web at comment.cio.com.

WHY SHOULD E-MAIL BE TREATED ANY DIFFERENT from telephone conversations? The law prohibits employers from taping private conversations without the knowledge of the parties involved, and the same should apply to e-mail and anything else private. Of course employers have done and will continue to do what they deem necessary, including peek into private e-mails—and there may be valid reasons like security, harassment and so on.

So what would help is making sure there is a clear and well-publicized policy so that there is no misunderstanding or misinterpretation about e-mail etiquette. It would also help to implement systems similar to what parents use to block access to offending websites and warn offenders that they are being watched if attempts to bypass the system are detected.

Gerard Baena

*Senior Manager
AllStar Consultants International
San Ramon, Calif.
gbaena@pacbell.net*

I HAVE NO PROBLEM WITH MANAGEMENT READING associate e-mail. First, my company makes it clear that we have no expectation of privacy, so I should expect none. Second, my company pays me to work, and that is what I should concentrate on.

With that said, I believe a certain amount of personal e-mail is acceptable and should probably be expected. E-mail that I send is typically very short, and it's one-way. If I make a phone

call, it can turn into a longer conversation simply because it is two-way communication.

Bottom line is this: It's the company's system. I always assume that someone down the line (in addition to the person originally addressed) will be reading my e-mail.

Jim Lavelle

*Project Leader
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MANAGEMENT HAS THE RESPONSIBILITY TO ENSURE company resources are used appropriately. Personal use of company e-mail service, like the use of company telephone service, is an abuse. But more important, management is responsible for getting the job done in a healthy and safe work environment. Does management have the time or resources to monitor e-mail? I think not. Should management monitor e-mail? Only when a specific problem is known to exist.

Carl M. Vigil

*Senior Security Analyst
San Jose State University
San Jose, Calif.*

I AM SURPRISED THAT MOST OF THE RESPONSES ADVOCATE the monitoring of e-mail. Is this based on logic or a desire for control? To me, e-mail is just another instrument. It can be used productively or abused. If employees waste time with e-mail or web browsing, I believe you have a management problem—not a technology problem. Does the work keep your employees interested? Do they have enough work? Are they part of the team? My experience is that happy people with interesting work would rather work than waste time.

Rick Rüsön

*Senior E-Business Analyst for Idea Integration
Management Technology Group
Englewood, Colo.*

THE AUTHOR'S POINT IN SUMMARY IS THAT A HOSTILE work environment, as defined by management reading employee's e-mail, may drive IT employees away. What about a hostile work environment, created by sexually explicit pictures and jokes, which may also drive employees away? I believe that the legal ramifications of allowing a hostile environment are the greater risk for the company. IT management can take the high road with a computer usage policy that stresses productivity and a safe workplace without being condescending.

David Langston

*Director of IT Operations
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CIOs for Hire

BY KRIMO SALEM AND ANANTH REDDY

LIFE IS TOO SHORT for people to spend their time working. That may sound strange coming from the CEO and the vice president of strategic services of a growing company, but it's true. And that's really how our company started.

Having been CIOs or directors of IS at both large and small companies, we recognized two problems with the CIO position. It seems that CIOs of small companies often don't have enough challenges to fill their days. But CIOs at larger companies face a different problem: They don't always have the chance to do what they are there to do. As a CIO, much of your day is spent in meetings, and it is easy to become too involved in politics and not concentrate enough on the CIO's core competency, which is business and IT strategy. Not only do you sacrifice quality of life by doing that, but you also work less efficiently when your time is divided. We wanted to find a way for a technology expert to be a CIO and also be happy, have a life *and* be efficient. So we came up with an environment where technology executives can excel without sacrificing their lives to their jobs. Our company, which maintains a growing and highly experienced group of virtual CIOs, is based on that concept.

With our model, one CIO can serve up to three or four companies. Usually, the CIO spends one day a week on the premises of the company; otherwise he or she is virtual, and the client company can reach him or her by cell phone or e-mail. Currently, we have about 20 virtual CIOs, all of whom were directors of IS, vice presidents of IS or CIOs for at least five years with a minimum of 20 years of IT experience. Our CIOs have expressed to us the frustrations they felt in their past positions. Working virtually for more than one company, they can concentrate on the challenging activities they enjoy and can feel that they're being effective without having to sacrifice their quality of life. People are much happier when they're judged on the deliverables, not on the amount of time they spend in the office, in meetings or untangling company politics.

Through our experiences in other companies, we found that it can be lonely being the CIO—you're caught between business and IS, and you don't really belong to either. At the same time, you're expected to know everything about technology, and you can't show any weakness. Because they have the knowledge base of many experienced CIOs under one roof, our CIOs don't have that problem. We have weekly meetings with all the CIOs to go over what's going on in each company. At any time, the CIOs can ask for help or advice from their peers.

Our customers are able to take advantage of the knowledge, experience and execution of a whole group of CIOs at once, and they consider us a real asset to their growing organizations. Not only do we fill the immediate need for executive IT management, but we also provide long-term strategic advice and direction, whether or not they have internal CIOs. Our IT war room fulfills the tactical needs of such organizations, for which convenience and easy access to key services is critical. We have successfully proved this business model in the most demanding of situations, and it is well on its way to expansion throughout Canada, Europe and the United States.

While the need to deliver results in the CIO job hasn't gone away, the high-stress environment has. One of our CIOs tells us that his blood pressure is half what it was before he started working for us.

And when life is already short, that's a great thing. 

Looking for a platform for your ideas? Reach us at platform@cio.com. Krimo Salem is president and CEO of If & Then, and Ananth Reddy is vice president of strategic services at the same company.

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Loyalty Complex

Are you doing enough to hold on to your young staffers?

BY TOM WAILGUM

THERE USED TO BE six of us. And then there was one.

I started at CIO in May 1996 as an editorial assistant. I was 24. Give or take half a year, so did five others, all about the same age and all about the same job levels in a mixture of departments within the company. We all formed a bond—a clique, some other staffers were heard to grumble.

As of today, the other five have left for greener pastures. One web developer went to a startup. One writer went to law school. One editor went to a competing magazine. One marketing person went to a research company. And the other editorial assistant went to another publication owned by our corporate parent. None was fired. None was forced out. None left CIO with a bad taste in his or her mouth. They all just left.

I have been promoted twice and my salary has increased to where I can afford some of life's niceties that I wished I could get while in college—such as something other than pasta for dinner, two-ply toilet paper and a beer whose name doesn't contain the word Milwaukee. I am challenged every day at work, and my boss is the best. I have career goals that I am



working toward, and I feel hopeful about my future. Put simply: I'm in my happy place.

What, Me Worry? Yes.

But a part of me can't help feeling that I might be missing something by not scanning Monster.com on a daily basis, updating my résumé every Sunday night with the past week's accomplishments or establishing a network of headhunters. Friends and departed colleagues of mine, both in the IT industry and outside, tell me countless stories of companies wanting to interview them for jobs, receiving daily headhunter calls and being offered surprisingly large signing bonuses (and most of them aren't pro baseball players).

These days, it seems that even if you really like your job—the benefits, the pay, your coworkers, the opportunity for growth—and you do good, management-recognized work,



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something is probably wrong with you if you've stuck with one company for more than a couple of years. This is my problem. I can't shake the feeling that working at one place for four years is a bad thing.

It's not really my fault, though. After undergoing extensive testing, I learned that I have a rare medical condition called *Prematura loyalitas*—extreme loyalty to one company at an early age. I took the Myers-Briggs test and came up as an ESTJ, identifying me as a fiercely loyal employee who's conscious of the chain of command. (They told me Harry S. Truman had the same qualities. And Joan Rivers too—can we not talk about this one?)

Nevertheless, in today's job market it appears that badges of honor are bestowed on individuals 35 and younger for each company that they tear through. Loyalty is out; dead presidents

watch their friends and coworkers stream through the revolving doors of your companies? Are you developing innovative ways to keep young staffers loyal? (And I'm not talking about Pizza Fridays, Hawaiian T-shirt Thursdays or any other "Insert Your Own Novelty Activity" and "Add a Day of the Week" here.) A lot of hiring managers would rather whine to their bosses about the dearth of qualified applicants whom their headhunters are bringing to them than work a little harder at identifying in-house prospects who have the potential to flourish with said companies.

Not every employee needs or wants more money. You might be surprised to hear that money isn't (and shouldn't be) the be-all and end-all factor for every one of your young employees.

So let's get innovative here. I've got five free hints to help you understand this crop of young, loyalty-free workers.

- Talk to your employees on occasion about things besides hubs, internet speeds and LANs; don't forget about life outside work (it does exist).
- Ask them where they want to be in five, 10 or 20 years—and don't be surprised if it's not at your company. And don't miss this

opportunity to ask them what you need to do to keep them at your company in the future.

- Praise in public (we do like that) and criticize in private (that's extremely helpful).
- Remember that it's just a job; if you make it a "life or death" work environment for your underlings, they're going to hit the road fast.
- Invest in us. (But, you say, that's money! And I say, not necessarily.) Matching our 401(k)s, sending us on training trips or kicking something extra into our employee stock ownership plans isn't just about money. It also means you're thinking about your employees' futures. And that's pretty cool with us.

But whatever you do, if you can't show your troops the money, don't show them the door by not doing anything to stop them. Make them feel that their work at your organization is important. Make them feel that they are needed, wanted and valued.

This isn't a plea for a raise nor is this a rant from a disgruntled worker. Like I said, I'm perfectly happy, I have a great boss and I like it here. So please tell me why I have to look elsewhere? **CIO**

The "E" in Senior Copy Editor Tom Wailgum's Myers-Briggs profile stands for extrovert, so he needs a lot of attention. Give 'im hell at twailgum@cio.com.



PHOTO BY FURNALD/GRAY

If I hear one more time about how "freakin' hot" the IT labor market is, I might have to bludgeon myself with a router connector.

are in. The reign of the company as king is over—a new heir has seized the throne, the employee. And maybe that's the way it should be. We all have friends and family who have tested the waters of the job market, are swimming in the green stuff as a result and still have not given some to us less fortunate people who work for a technology publication. Here at *CIO*, we even encourage this kind of behavior in our readership. We write about them all the time, usually hailing them as "movers and shakers."

Hot Commodities

I know I'm preaching to the choir here—you CIOs and IT hiring managers could sing me the blues on how your good and not-so-good staffers are leaving you on a daily basis. The problem you face, however, is twofold. One, your employees know how hot a commodity they are; and two, there are dozens of IT staffing agencies that are enabling them to fulfill their hotness. (And if I have to hear one more time about how "freakin' hot" the IT labor market is, I might have to bludgeon myself with a router connector.) Even the Fox Network is rumored to be expanding its programming to take advantage of the hotness of the IT labor market: Premiering next sweeps, Fox will be going back to the "Who Wants to Marry a Millionaire" theme, with "Who Wants to Marry a Microsoft Certified Engineer?"

The question to be answered, then, is how do IT managers and HR departments retain young Gen X-ers like myself, who

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Opinion | From the Publisher

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Wither Microsoft?



Gary J. Beach

A REPORTER FROM a major news agency recently called me for comment on Microsoft's move into the wireless and home entertainment businesses. "What are Microsoft's plans in these markets?" was the crux of his inquiry.

Having just come from the official launch of Windows 2000—an event Microsoft claims is the most important in the company's 24-year history—I got to thinking, why is Microsoft entering these markets when it should be focusing on convincing CIOs that Windows 2000 can make their lives easier? If there is any criteria for success in the technology market, it is focus, focus and more focus. I was becoming convinced that Microsoft, though it recently got Bill back as "chief software architect," was more in need of a chief marketing officer.

Yes, wireless is a huge opportunity. But consortiums such as European-based Symbian, backed by wireless giants Nokia, Ericsson, Motorola and Matsushita Electric Works, are calling the shots here. Few think Microsoft—and its partners Compaq and Hewlett-Packard—can seriously challenge Symbian's leadership as the wireless operating system standard. Mark my words: Microsoft is destined to spend millions of dollars to produce an offering that will be the OS/2 in this dynamically evolving market.

By looking around for any and all opportunities to place its bets, Microsoft seems to be implementing a 360-degree marketing strategy. There's nothing wrong with that...unless you are a CIO considering whether to commit to Windows 2000 as your de facto enterprise operating standard.

If I were a CIO, Microsoft's follow-up announcement to the wireless foray of X-Box, a product *The New York Times* called "a Windows PC masquerading as a video game console," would make me nervous. The internet appliance/home entertainment market is huge. Like wireless, it has well-established players—Sony, Nintendo, Sega—all of which are focused on one thing: video entertainment. Didn't Microsoft learn its lesson several years ago with Bob, its interface and organization software for home PC users? The Japanese will cream Microsoft in the home entertainment market, hands down.

Microsoft management had better start paying more attention to CIOs and what they are saying about Windows 2000 Datacenter Server, the release of Windows 2000 designed to run on enterprise servers. CIOs are not going to remove Unix, Linux or any other industrial-strength data center operating system any time soon and replace it with Windows 2000. As a result, Windows 2000 Datacenter is unlikely to become a volume business no matter how hard Steve Ballmer tries.

"Where do you want to go today?" is Microsoft's current marketing slogan. It is unclear to me whether they have a precise answer to that question as it pertains to CIOs and the enterprise. On May 4, Microsoft intends to shed light on that question with its "Next Generation Windows Services," what it calls "a new set of software, services and solutions for its customers built around the internet and Windows."

Look for it and ask yourself this question: Does this convince me that Microsoft really understands the needs of the men and women responsible for managing the next-generation enterprises? Or is it a marketing ploy? Depending on your answer, plan your enterprise's future with, or without, Windows 2000.

I'd love to hear what you think. Let me know at gbeach@cio.com.

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In Future Issues

Help Wanted— a CFO or CIO?

The halls of executive recruiters and IT consultancies, not to mention the trade press, buzz with conjecture about the future of IT leadership and the momentum building up around the title of chief technology officer, or CTO. At its most dire, the rumble prophesies the demise of the CIO position—or at least its relegation to a less strategic, more internally focused supporting role. Can this really be true?

Boardroom Negotiations

If there's any meeting that should have Michael Young feeling a little nervous, it's this one. On one Tuesday afternoon, the CIO and chief e-commerce officer of Hello Direct is preparing to present his IS plan for the coming year to the other five members of the company's executive board. His plan is ambitious, and Hello Direct is facing some formidable challenges. So why does this CIO look like he doesn't have a care in the world?

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—The Editors

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Adviser Spotlight

As vice president and CIO for The Nature Conservancy, Doug Barker and his 80-person IT team are part of the world's leading private conservation group, helping to protect more than 11 million acres of habitat in the United States and more than 70 million acres in

Canada, Latin America, the Caribbean, Asia and the Pacific.

Since arriving at the Conservancy in 1993, Barker has held varying positions, from director of data systems to director of IS. Barker says that the evolution of his title is pretty telling. "It illustrates more than my career growth," he says. "It also demonstrates the shift of IT from a cost center to a strategic enabler."

Barker has just wrapped up an enormous systems integration project. Over three years, the IT group converted more than 200 separate databases into one integrated system accessible by 500 employees in more than 100 locations. The system supports

fund-raising efforts by tracking support from all of the Conservancy's constituents.

According to Barker, the Conservancy is the first large nonprofit organization to provide one integrated system for all of its global offices on a real-time basis. "And it had all the potential to fall on its face—we've watched similar projects at other organizations never get implemented after lots of years and lots of money," he says. However, Barker says the strong buy-in from President and CEO John Sawhill made all the difference.

Barker has other major challenges afoot: One is continuing to provide a suite of connectivity tools for remote and traveling staff by implementing a virtual private network. The organization is also using web technologies to enable collaboration and sharing of best practices among Conservancy staff and partners.

In order to achieve his goals, Barker has fostered numerous corporate and government partnerships. "The IT industry is much more receptive to such collaborations than old mainline businesses," he notes.

—Lisa Kerber



PHOTO BY KATHERINE LAMBERT

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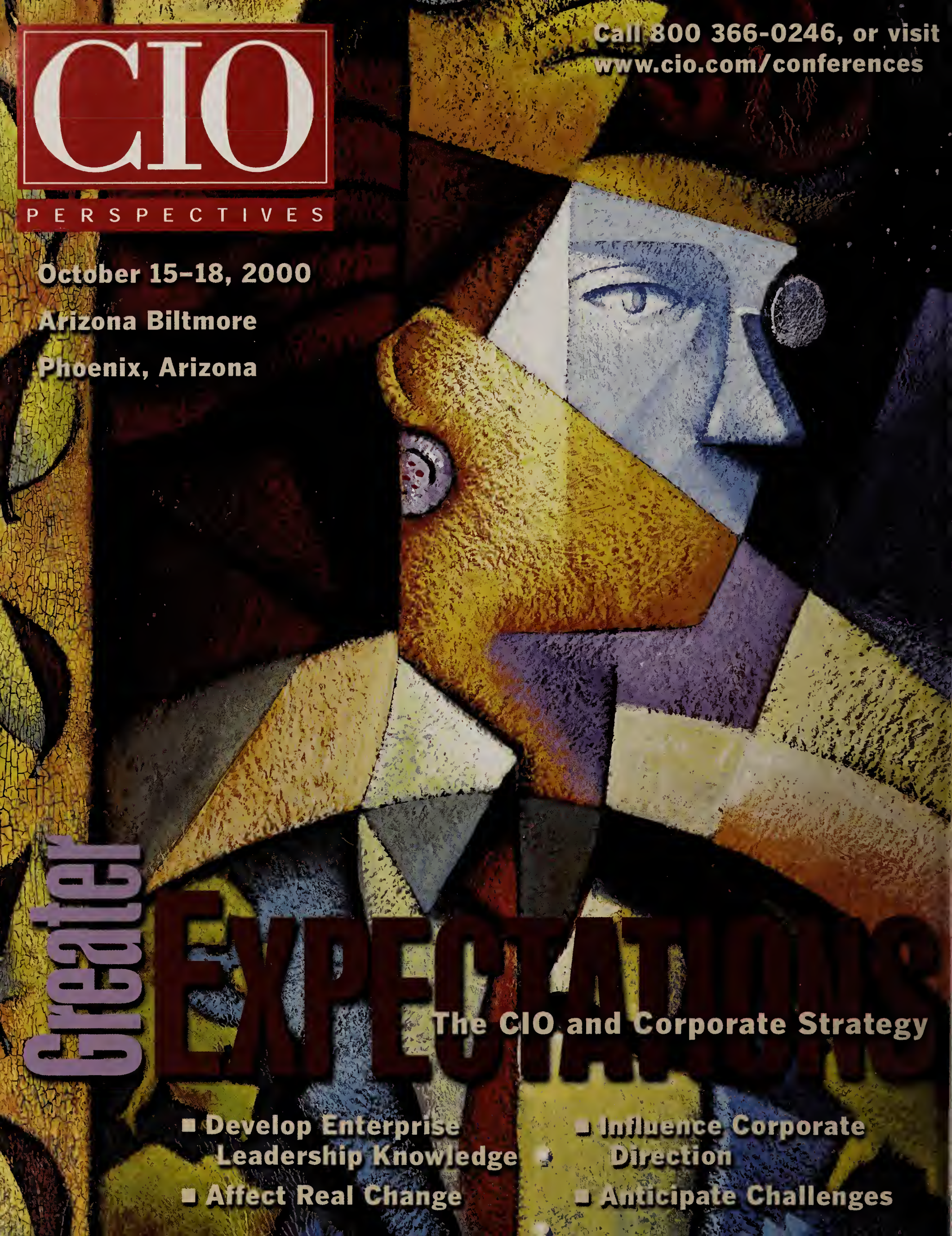
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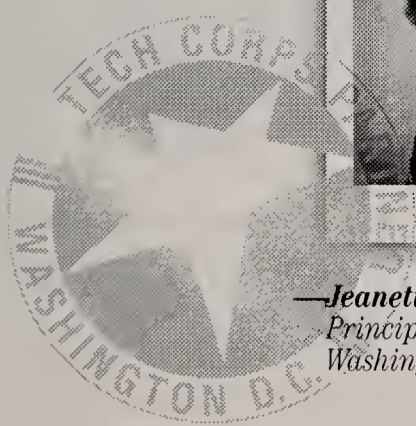
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Interview

BY ELANA VARON

CHARLOTTE Roberts

As president of Blue Fire Partners, in Sherrills Ford, N.C., Charlotte Roberts counsels executives on living with and growing with change. Together with The Fifth Discipline author Peter Senge, Roberts writes and speaks about how to create learning organizations that draw strength from the values and vision of employees. She tells CIO why and how leaders should align corporate goals with those of the workforce. (Visit CIO Radio at www.cio.com/radio to hear more from Roberts.)

CIO: You write about the workplace as a community. Do you think people can really feel the same way about where they work as they do about the towns they live in, or their schools or places of worship?

ROBERTS: Each and every one of us wants to be seen as a unique human being. If you can build a sense of community that lets each person feel like he or she can grow and evolve, then you've got an organization that will have lower turnover and will probably be more adaptive. If I feel that I can be a whole person at work, I am more likely to

give those extra hours, come up with new ideas or take action in the face of uncertainty and ambiguity.

What qualities should a leader have in order to instill community and personal values into a company?

First, the ability to engage people in a meaningful conversation. Second, the ability to sense the direction of the organization. The third characteristic of a leader is self-awareness. They've really got to understand their own values, their strengths, what they bring to an organization. Another competency is the ability to build a sustained relationship. And let's put the word *sustained* in 10-foot-high letters that blink. As we redesign our organizations to be more responsive to the marketplace, our relationships with employees and other businesses and strategic partners change all the time. If I outsource your

job and you're now a contractor to my company, what you do is still critical to my performance. I have to sustain my connection and relationship with you.

How have you applied these principles to your own company?

I have consultant colleagues whom I call and say, "Help me discover what I am thinking and feeling." Especially when I get stuck. I continue to go to workshops and get coaching from my mentors. I stay networked. Many of my clients end up being friends. I think sustaining relationships is the most important thing. So when they move on to other organizations, oftentimes my clients will take me with them because we know how to work together. **CIO**

Does your company feel like home to you? Tell Senior Writer Elana Varon at evaron@cio.com.





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